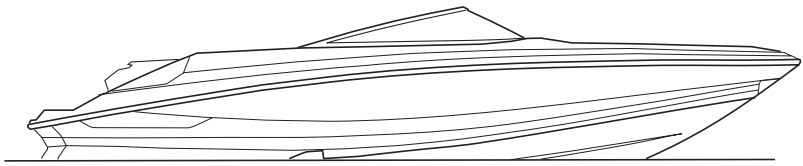
REGAL®

Follow no one.

# OWNER'S MANUAL
# 2200-2250



# OWNER'S MANUAL

# 2200/2250

REGAL# 783067

10/06 REVISION

## INTRODUCTION


Your Regal Owner's Manual
General Information
Regal Warranty


## 1 SAFETY ON BOARD


| | |
|---|---|
| Safety Labels | 1-1 |
| General Boating Safety | 1-3 |
| Required Safety Equipment | 1-7 |
| Fire Extinguishers | 1-10 |
| Visual Distress Signals | 1-12 |
| Sound Protecting Devices | 1-15 |
| Navigation Lights | 1-15 |
| Marine Sanitation Devices | 1-17 |
| Exhaust & Carbon Monoxide | 1-21 |
| Boating Under The Inflluence | 1-25 |
| Boating Accidents | 1-27 |
| Water Sports | 1-29 |
| Weather & Water Conditions | 1-34 |


## 2 RULES OF THE ROAD


| | |
|---|---|
| Navigation Rules Defined | 2-1 |
| Navigation Rules | 2-2 |
| Night Running | 2-9 |


## 3 ENGINES & CONTROLS


| | |
|---|---|
| Engines | 3-1 |
| Propulsion | 3-3 |
| Controls | 3-5 |
| Remote Control | 3-13 |


## 4 SYSTEMS


| | |
|---|---|
| Electrical | 4-1 |
| Fuel | 4-10 |
| Water | 4-13 |
| Waste | 4-13 |


## 5 VESSEL OPERATION


| | |
|---|---|
| Getting Underway | 5-1 |
| Fueling | 5-3 |
| Starting & Stopping | 5-6 |
| Steering | 5-8 |
| Fenders | 5-10 |
| Dock Line Basics | 5-11 |
| Steps To Stern Drive Docking | 5-14 |
| Stern Drive Maneuvering | 5-16 |
| Trim Angle | 5-19 |
| Anchoring | 5-24 |
| Emergencies | 5-27 |
| First Aid | 5-28 |
| Hypothermia | 5-29 |
| Environmental Awareness | 5-30 |


## 6 EQUIPMENT OPERATION


| | |
|---|---|
| Drain Plug | 6-1 |
| Bilge Pump | 6-2 |
| Chemical Toilet | 6-2 |
| Fresh Water System | 6-2 |
| Compasss | 6-3 |
| Bucket Seat Operation | 6-4 |
| Swim Platform/Ladder | 6-6 |
| Center Windshield Latch | 6-7 |
| Gas Grill | 6-7 |
| Cabin Door | 6-7 |
| Berth Set-Up | 6-8 |
| Cockpit Table | 6-8 |
| Stereo | 6-9 |
| Sirius Satellite Radio | 6-18 |
| Performance Package | 6-19 |
| Ipod Adapter | 6-19 |
| Electronics | 6-20 |
| Canvas | 6-42 |
| Volvo Neutra-Salt System | 6-46 |

# Table Of Contents


## 7 COSMETIC CARE & MAINTENANCE

Cosmetic Care 7-1
Maintenance 7-11

## 8 TROUBLESHOOTING

Diagnostic Charts 8-1

## 9 STORAGE/WINTERIZATION

Decomissioning Checklist 9-2
Recomissioning Checklist 9-5

## 10 TRAILERING

Before Trailering 10-1
Driving 10-5
Launching 10-6
Loading Boat 10-8

## 11 GLOSSARY & INDEX

Glossary 11-1
Index 11-5

## 12 TECHNICAL INFORMATION

*Dear Regal Owner,*

*I know I speak for everyone at Regal when I welcome you to the ever-growing family of Regal boat owners. You've chosen a craft that is recognized worldwide for its standard of excellence. Each step in construction has been carefully scrutinized to assure comfort, performance, reliability and safety for both your passengers and yourself.*

*Your boat is certified by the National Marine Manufacturers Association. It also complies with the applicable standards set by the United States Coast Guard and the American Boat and Yacht Council. Your Regal boat was built with the same attention to detail and quality of construction that we would expect in a boat we would purchase ourselves.*

*Whether you're a veteran boater or a newcomer, we strongly urge you to read this boat owner's manual thoroughly. Familiarize yourself with the various components of your boat, and heed the safety precautions noted herein.*

*If you have questions that are not covered in this manual, please consult your authorized Regal dealer for assistance or phone the Regal factory at 407-851-4360.*

*Thank you, and welcome to the "World of Regal!"*

*Paul Kuck*

*Founder*

# *Mission Statement*

*With God's help*

*and a steadfast commitment to integrity,*

*we will develop a team*

*of exceptional people and relationships*

*to provide exceptional customer*

*satisfaction.*

# Introduction

Boating is becoming more popular every year. There are numerous types of recreational vessels on our waterways today involved in an every growing number of activities. Therefore, as a new boat owner it is of the highest priority to learn about general boating practices before operating your craft.

Your Regal dealer will answer many questions and provide valuable "hands on" information during the completion of the new boat delivery process. In addition, your dealer has received special factory training on the product line and his services should be employed to solve technical problems and periodic maintenance beyond the scope of this manual. Also, your Regal dealer carries a line of factory approved parts and accessories.

Your Regal dealer can provide information regarding national training organizations such as the U.S. Power Squadron and United States Coast Guard Auxiliary. Along with other organizations and literature, they can help build your "boating savvy" by developing the necessary skills and awareness to be a safe and component skipper. Your local library can also help in providing recommended boating literature such as Chapman Piloting (Seamanship & Boat Handling by Elbert S. Maloney). Remember, the waterways can change from normal to abnormal conditions in a heartbeat. Knowing how to react quickly comes from experience and knowledge which can be gained through boating education.

Welcome aboard!

# YOUR REGAL OWNER'S MANUAL

Your Regal owner's manual has been developed to assist you in operating your vessel with safety and pleasure. ***Be sure to read and become familiar with the contents before operating your craft.*** Your owner's manual has been divided into general chapters to assist you in becoming more knowledgable with your Regal boat. Also, we have added a special technical drawing chapter which can be valuable in maintenance and troubleshooting. ***This manual is not intended to be a complete source of boating maintenance, boat handling techniques, boating safety or seamanship. These skills require education and experience levels beyond this manual.***

In keeping with its commitment to continued improvement, ***Regal notes that all drawings, specifications, models, standard and optional equipment referred to in this manual are subject to change without notice.***

# OWNER'S INFORMATION PACKET

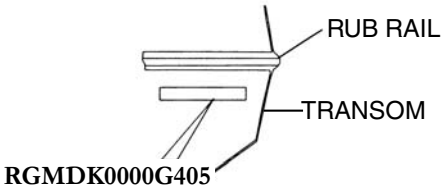
Regal has provided an information pouch aboard the vessel. Read and become familiar with the materials. This packet contains valuable literature on your propulsion package, standard and optional equipment, systems and various care and cleaning instructions. Be sure to store the information pouch in a clean dry area for quick reference.

# GENERAL INFORMATION

## Hull Identification Number (HIN)

The United States Coast Guard has established a universal system of numerically identifying vessels by using a hull identification number or "HIN." This number identifies your Regal boats model, hull number, month and year of manufacture. The HIN is found on your boat's transom, on the starboard side, just below the rub rail on the transom

vertical surface. The HIN consists of 12 alpha or numeric characters. It is recommended that you locate and write down the HIN for future reference. It can be especially useful when ordering parts from your Regal dealer. A second HIN number is found in a hidden location. This second HIN is useful to authorities if for example the boat is stolen and the original transom HIN is modified or eliminated.




**HULL IDENTIFICATION NUMBER**

## Vessel Information Sheet

It is recommended that you fill out the information on the following page. It will supply vital statistics on your vessel. Make a copy of the data for safe keeping at home.

## Vessel Float Plan

Fill out the float plan on the following page before departing. Leave it with a responsible person who will notify the United States Coast Guard or local law enforcement authorities if you do not return as planned. If you change your plans be sure to notify this person. Make copies of the float plan and use one each time you go boating. This will help people know where to find you should you not return on schedule. Do not file the float plan with the United States Coast Guard.

# VESSEL INFORMATION SHEET

Owner: _____

Address: _____

City & State: _____

Home Phone: _____ Business Phone: _____

In Case Of Emergency Notify: _____

Address: _____

City: _____ State: _____

Phone: _____

Insurance Agent's Name: _____

Policy#: _____

USCG Phone: _____ Local Police: _____

Marina Phone: _____ Slip (Dock#): _____

Hull Serial #: RGM __ __ __ __ __ __ __ __ __ __

Key #: _____ Engine Serial #: _____

Outdrive Serial #: _____

Key #: _____ Cabin Door: (If Applicable)

Selling Dealer: _____

Address: _____

City & State: _____

Phone: _____ Fax: _____

Servicing Dealer: _____

Address: _____

City & State: _____

Phone: _____ Fax: _____

# FLOAT PLAN

Owner: _____
Address: _____
City & State: _____
Telephone#: _____
Cell Phone#: _____

Person Filing Report: _____
Name: _____
Home Telephone#: _____
Cell Phone #: _____

Safety Equipment Aboard:

- ☐ Life Jackets
- ☐ First Aid Kit
- ☐ Flares
- ☐ Flashlight
- ☐ VHF Radio
- ☐ Anchor
- ☐ Compass
- ☐ Food
- ☐ Water

Make Of Boat: _____
Registration#: _____
Length: _____
Boat Name: _____
Gel Color: _____
Trim Color: _____
Inboard/Outboard: _____
Hull I.D.#: _____
Fuel Capacity: _____

Destination: _____
Leave From: _____
Time Left: _____
Going To: _____
Fuel Level: 1/4, 1/2, 3/4, F
Est. Time Of Arrival: _____

Return: _____
Est. Time of Arrival: _____
If not back by ___ o'clock
call Coast Guard

Other Information: _____

| Name Of Person Aboard | Age | Address | Phone# |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

# LAUNCH & CRUISE CHECKLIST

- ☐ Obtain a current weather report.
- ☐ Inspect the hull and propeller for damage.
- ☐ Check all electrical system switches for proper operation.
- ☐ If your boat has been in the water, run the bilge pump until the flow of water stops.
- ☐ If your boat has been out of the water, check to see that all bilge water has drained out. Install the drain plug.
- ☐ Check that all required safety equipment is on board and in good working condition.
- ☐ Check that all other equipment is on board such as mooring lines, first aid kit, tool kit and extra parts.
- ☐ Open engine compartment. Inspect for fuel odors and visible leaks in the fuel, oil, exhaust & power steering systems.
- ☐ Visually inspect engine for cracked hoses, defective belts, loose fasteners such as bolts, nuts and hose clamps.
- ☐ Check fuel level. Fuel tanks should be filled to near full capacity.
- ☐ Make sure all navigation charts, equipment and vessel registration paperwork are onboard.
- ☐ Check operation of bilge blower, steering system, navigation lights and horn.
- ☐ Make sure passengers and crew know how to operate safety equipment and react toan emergency.
- ☐ File a float plan with a responsible party ashore.

# SUGGESTED TOOLS, PARTS & GEAR

## SUGGESTED TOOLS

Allen Wrenches
Jack Knife
Phillips Screwdriver Set
Slotted Screwdriver Set
Regular Pliers
Combination Wrench Set
Ratchet & Socket Set
Hammer
Wire Crimpers
Vise Grip Pliers
Floating Flashlight
Nut Driver Set
Oil Filter Wrench
Fuel Filter Wrench

## SPARE PARTS

Fuel Filter
Spark Plugs
Water Pump Belt
Propellers
Alternator Belt
Anti-Siphon Set
Propeller Nut & Hardware
Penetrating Oil
Extra Light Bulbs
Extra Batteries
Duct Tape
Electrical Tape
Power Steering Fluid
Water Pump Impeller
Spare Keys On Floater

## BASIC GEAR

Tie Lines
Mooring Lines
Dock Fenders
First Aid Kit
Boat Hook
Foul Weather Gear
VHF Radio, EPIRB, GPS, Cell Phone
Charts & Plotting Instruments
Emergency Water & Food
Bailer Or Hand Pump
Fire Extinguisher
Personal Flotation Devices
Anchor & Line
Life Raft

## Capacity Plate

Close to the helm on Regal boats ***up to 26' in length*** is a ***capacity*** plate. This plate represents manufacturers who participate in the National Marine Manufacturer's Association small boat certification program. A similar ***yacht certification plate for boats over 26'*** covers many of the above guidelines and othes from ABYC into the yacht program.Your boat has been certified by NMMA approved inspectors to be in compliance with their system guidelines along with federal safety regulations. The driver of the craft must read the plate information before operating the vessel.

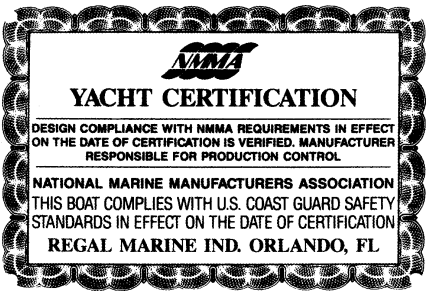
The capacity plate data applies under normal conditions. ***Be sure to read and abide by the capacity limits. Remember, the boat operator is responsible for the vessel and passengers.***

Note the following typical ***capacity*** plate information below:

- The plate states the maximum number of persons allowed on the boat.
- The total weight of persons, gear and other items under normal conditions that the boat is capable of carrying.
- Overloading, improper loading and weight distribution are well documented causes of accidents. Provide for an extra margin of safety in rough sea conditions.

MAXIMUM CAPACITIES
12 PERSONS OR 1800 LBS
3000 LBS. PERSONS, GEAR
THIS BOAT COMPLIES WITH U.S. COAST GUARD SAFETY STANDARDS IN EFFECT ON THE DATE OF CERTIFICATION
MANUFACTURER: REGAL MARINE INDUSTRIES, INC.
MODEL: 2600 LSR ORLANDO, FL
DESIGN COMPLIANCE WITH NMMA REQUIREMENTS BELOW IS VERIFIED. MFGR RESPONSIBLE FOR PRODUCTION CONTROL
LOAD CAPACITY * COMPARTMENT VENTILATION
STEERING, FUEL AND ELECTRICAL SYSTEMS
NAVIGATION LIGHTS * MANEUVERABILITY
NMMA NATIONAL MARINE MANUFACTURERS ASSN

TYPICAL EXAMPLES SHOWN


NMMA
YACHT CERTIFICATION
DESIGN COMPLIANCE WITH NMMA REQUIREMENTS IN EFFECT ON THE DATE OF CERTIFICATION IS VERIFIED. MANUFACTURER RESPONSIBLE FOR PRODUCTION CONTROL
NATIONAL MARINE MANUFACTURERS ASSOCIATION
THIS BOAT COMPLIES WITH U.S. COAST GUARD SAFETY STANDARDS IN EFFECT ON THE DATE OF CERTIFICATION
REGAL MARINE IND. ORLANDO, FL

## Owner's Registration & Systems Checklist

Please note that your Regal boat requires the proper registration by your authorized Regal dealer. To initiate your warranty the dealer must complete the owner's registraiton form and systems checklist at the time of delivery. The owner must sign the paperwork to acknowledge that the dealer has reviewed the boat systems and warranty provisions with the owner. The owner should keep the original paperwork that features a temporary warranty registration. A Regal express limited warranty certificate containg all relevant boat and engine serial numbers will be sent after the factory receives the paperwork.

## Dealer's Responsibility

Your boat has undergone rigid quality assurance inspections before leaving the factory. However, your dealer has been trained to perform final pre-delivery checks and to service your Regal boat prior to your pick-up. Your dealer's responsibilities include:

- A complete orientation in the operation of your Regal boat, including matters relating to the safe operation of your craft.
- Completion and mailing of your boat registration warranty form to Regal.
- Warranties, registration materials, owner's manual, operation, installation and maintenance instructions for all auxiliary equipment supplied with or installed on your Regal boat.

## Owner's Responsibility

You are entitled to all the benefits and services outlined in your Regal boat warranty. However, you have certain responsibilities to ensure warranty satisfaction. These are:

- To read the warranty materials and understand them fully.
- To examine the boat in detail at the time of delivery.
- Apply the following: boating rules and regulations, safety equipment, environmental regulations, accident reports and warranty regulations terms and conditions.
- To read throughly all literature supplied with your boat, including this owner's manual and to follow the recommendations in the literature.
- To return the boat after the recommended hours of engine operation for the proper dealer service inspections.
- To provide proper maintenance and periodic servicing of your boat and equipment as set forth in the various manuals supplied.

REGAL
Luxury Performance Boats
AN ISO 9002 REGISTERED COMPANY

# RUNABOUTS and CUDDY
# NEW BOAT DELIVERY CHECKLIST

REGAL MARINE INDUSTRIES
2300 JETPORT DRIVE
ORLANDO, FLORIDA 32809
(407) 851-4360

**OWNER REGISTRATION INFORMATION**

NAME _____ DEALER _____

ADDRESS _____ HULL # _____

CITY _____ STATE _____ ZIP _____ MODEL _____

COUNTRY _____ PHONE # _____ EMAIL _____

**INSTRUCTIONS:** This checklist is designed to assist dealers in the delivery of a Regal Boat to a new owner. Review the location, operation and maintenance of each item noted below with the owner and acknowledge this by checking the appropriate boxes. Indicate if item is not applicable with "NA". This form must be completed and signed by the dealer's representative and the customer to acknowledge proper receipt of the boat. The warranty will not be activated until a fully completed and signed copy has been received by Regal Marine.

| A. NEW BOAT INFORMATION | DEALER | OWNER |
|---|---|---|
| 1. Review Regal's warranty | ____ | ____ |
| 2. Review Engine warranty | ____ | ____ |
| 3. Review Regal's owner manual | ____ | ____ |
| 4. Review owner's package | ____ | ____ |
| 5. Review dealer's service procedures | ____ | ____ |
| 6. Review owner's service responsibilities | ____ | ____ |

| B. CABIN (IF APP) | DEALER | OWNER |
|---|---|---|
| 1. Location of all storage areas | ____ | ____ |
| 2. Cabin lighting | ____ | ____ |
| 3. Deck hatch | ____ | ____ |
| 4. Port hole | ____ | ____ |
| 5. Carbon monoxide detector | ____ | ____ |
| 6. Dinette table set up | ____ | ____ |
| 7. Cabin cushions set up | ____ | ____ |
| 8. Electrical panel | ____ | ____ |
| 9. Toilet / head | ____ | ____ |
| 10. Water system | ____ | ____ |

| C. COCKPIT | DEALER | OWNER |
|---|---|---|
| 1. Swim ladder | ____ | ____ |
| 2. Transom shower | ____ | ____ |
| 3. Cockpit seating set up | ____ | ____ |
| 4. Engine hatch operation | ____ | ____ |
| 5. Cockpit storage areas | ____ | ____ |
| 6. Refreshment center | ____ | ____ |
| 7. Fishing package | ____ | ____ |

| D. INSTRUMENTATION | DEALER | OWNER |
|---|---|---|
| 1. Function of all gauges | ____ | ____ |
| 2. Function of all switches | ____ | ____ |
| 3. Throttle & shifter | ____ | ____ |
| 4. Steering | ____ | ____ |
| 5. Ignition | ____ | ____ |
| 6. Operation of all optional electronics | ____ | ____ |

| E. ENGINE ROOM | DEALER | OWNER |
|---|---|---|
| 1. Engine fluid check | ____ | ____ |
| 2. Trim pump location / fluid check | ____ | ____ |
| 3. Battery I | ____ | ____ |
| 4. Battery switch (may be in cockpit) | ____ | ____ |
| 5. Bilge pump | ____ | ____ |
| 6. Trim tab pump | ____ | ____ |
| 7. Fire extinguisher | ____ | ____ |
| 8. Blower | ____ | ____ |

| F. CANVAS | DEALER | OWNER |
|---|---|---|
| 1. Canvas set up | ____ | ____ |
| 2. Canvas storage | ____ | ____ |
| 3. Canvas care and cleaning | ____ | ____ |

| L. CARE & CLEANING | DEALER | OWNER |
|---|---|---|
| 1. Vinyl uph. care & cleaning | ____ | ____ |
| 2. Windshield care & cleaning | ____ | ____ |
| 3. Gel coat care & cleaning | ____ | ____ |
| 4. Stainless steel hardware care & cleaning | ____ | ____ |
| 5. Toilet system care & cleaning | ____ | ____ |

**CAUTION:** This checklist is only intended to provide a general overview and does not represent all information necessary for proper operation of the boat. It is very important that persons operating this boat study the various manuals and materials provided with the boat and follow the recommendations contained in these materials. They contain important information including cautions and warnings that are vital to safe and enjoyable operation of the vessel. It is the owner's responsibility to insure that anyone operating the boat has been properly trained.

We have completed a review and orientation of the boat and its systems. The boat is in order and functioning properly with the exception of any items specifically noted above. This confirms that owner has received a copy of the Regal Limited Lifetime Warranty and engine manufacturer's warranty and agrees to these warranty terms and conditions.

_____ _____
DEALER REPRESENTATIVE DELIVERY DATE

_____ _____
OWNER DATE

# REGAL MARINE INDUSTRIES, INC.
# LIFETIME PLUS LIMITED HULL WARRANTY

Welcome to the Worldwide Family of Regal Owners! We are very pleased that you have chosen a Regal Powerboat!

This document is your Warranty Registration Certificate and Statement of Warranty. Please check the registration information section for accuracy. If this information is not correct or if you change your address at some future date, please notify us at the following address: Regal Marine Industries, Inc. Attention: Warranty Registrations, 2300 Jetport Drive, Orlando, Florida 32809

Please read the warranty carefully. It contains important information on Regal's claims procedures and your rights and obligations under this warranty.

**WHAT IS COVERED:** This Limited Warranty applies only to Regal beginning with model year 2005.

**LIFETIME LIMITED STRUCTURAL HULL WARRANTY:** Regal Marine Industries, Inc. warrants to the original retail purchaser of this boat if purchased from an authorized Regal dealer that the selling dealer or Regal will repair or replace the fiberglass hull if it is found to be structurally defective in material or workmanship for as long as the *original* retail purchaser owns the boat. For purposes of this warranty, the hull is defined as the single fiberglass casting which rests on the water. This limited warranty is subject to all limitations and conditions explained below.

**FIVE-YEAR TRANSFERABLE LIMITED STRUCTURAL HULL WARRANTY:** In addition to the Lifetime Limited Structural Hull Warranty, Regal offers a Transferable Five-Year Limited Structural Hull Warranty. Under the Five-Year Transferable Limited Structural Hull Warranty, Regal will repair or replace the fiberglass hull if it is found to be structurally defective in material or workmanship within the first (5) years after the date of delivery to the original retail purchaser. Any remaining term of this Five-Year Limited Hull Warranty may be transferred to a second owner if within 60 days of purchase, the new owner registers the transfer with Regal and pays the established warranty transfer fee. Contact Regal Customer Service at the above address for details.

**FIVE-YEAR LIMITED HULL BLISTER WARRANTY:** Regal will Warrant to the original retail purchaser, any underwater gelcoated surfaces of the hull against laminate blisters which occur as a result of defects in material or workmanship within (5) years of the date of delivery, provided that the original factory gelcoat surface has not been altered. Alternation would include but is not limited to damage repair; excessive sanding, scraping, sandblasting; or from improper surface preparation for application of a marine barrier coating or bottom paint, any of which shall void this Five-Year Limited Hull Blister Warranty. Regal Marine shall repair or cause to be repaired any covered laminate blisters based on the following prorated schedule. Less than two (2) years from delivery date - 100%, Two (2) to three (3) years from delivery date - 75%, Three (3) to four (4) years from delivery date - 50%, Four (4) to five (5) years from delivery date - 25%.
Reimbursement shall be limited to one repair, not to exceed ($80.00) dollars per foot of boat length prior to prorating. Regals prior authorization for the method and cost of repair, must be obtained before repairs are commenced. All costs to transport the boat for repairs are the responsibility of the owner.

**LIMITED GENERAL WARRANTY:** In addition to above hull warranties, Regal warrants to the original purchaser of this boat if purchased from an authorized dealer that the dealer or Regal will repair or replace any parts found to be defective in materials or workmanship for a period of one (1) year from the date of delivery, subject to all limitations and conditions contained herein.

**LIMITED EXTERIOR FINISH WARRANTY:** Regal warrants that the selling dealer or Regal will repair cosmetic defects in the exterior gelcoated finish including cracks or crazing reported to Regal within 90 days from the date of delivery to the original purchaser, subject to all limitations and conditions contained herein. All warranty work is to be performed at a Regal dealership or other location authorized by a Regal Customer Service Manager after it is established to Regal's satisfaction that there is a defect in material or workmanship.

## REGISTRATION INFORMATION:

**CUSTOMER OBLIGATIONS:** The following are conditions precedent to the availability of any benefits under these limited warranties:
(a) The purchaser must sign and the dealer must submit to Regal the "OWNER REGISTRATION AND SYSTEMS CHECKLIST
FORM within ten (10) days of the date of delivery and such information must be on file at Regal.
(b) The purchaser must first notify the dealer from whom the boat was purchased of any claim under this warranty within the applicable warranty period and within a reasonable period of time (not to exceed thirty (30) days) after the defect is or should have been discovered.
(c) Regal will not be responsible to repair or replace any part, (1) if the use of the boat is continued after the defect is or should have been discovered; and (2) if such continued use causes other or additional damage to the boat or component parts of the boat.
(d) Based on the dealer's knowledge of Regal's warranty policy and/or consultations with Regal, the dealer will accept the claim and arrange for appropriate repairs to be performed, or deny the claim if it is not within the warranty.
(e) The dealer will contact the Regal boat owner regarding instructions for delivery of boat or part for warranty repair if it is covered by the limited warranty.
ALL COSTS TO TRANSPORT THE BOAT FOR REPAIRS ARE THE RESPONSIBILITY OF THE OWNER;
(f) If the Regal boat owner believes a claim has been denied in error or the dealer has performed the warranty work in an
unsatisfactory manner, the owner must notify Regal's Customer Service Department in writing at the address listed for further consideration. Regal will then review the claim and take appropriate follow-up action.

**WARRANTY EXCEPTIONS: THIS LIMITED WARRANTY** does not cover and the following are not warranted:
(a) Engines, metal plating or finishes, windshield breakage, leakage, fading and deterioration of paints, canvas, upholstery and fabrics;
(b) Gelcoat surfaces including, but not limited to, cracking, crazing, discoloration or blistering except as noted above;
(c) Accessories and items which were not part of the boat when shipped from the Regal factory, and/or any damage caused thereby;
(d) Damage caused by misuse, accident, galvanic corrosion, negligence, lack of proper maintenance, or improper trailering;
(e) Any boat used for racing, or used for rental or commercial purposes;
(f) Any boat operated contrary to any instructions furnished by Regal, or operated in violation of any federal, state, Coast Guard or other governmental agency laws, rules, or regulations;
(g) The limited warranty is void if alterations have been made to the boat;
(h) Transportation of boat or parts to and/or from the REGAL factory or service location;
(i) Travel time or haul outs, loss of time or inconvenience;
(j) Any published or announced catalog performance characteristics of speed, fuel and oil consumption, and static or dynamic transportation in the water;
(k) Any boat that has been repowered beyond Regal's power recommendations;
(1) Boats damaged by accident and boats damaged while being loaded onto, transported upon or unloaded from trailers, cradles, or other devices used to place boats in water, remove boats from water or store or transport boats on or over land;
(m) Water damage to, dry rot to, condensation to, or absorption by interior surfaces, wood structures or polyurethane foam;
interior wood including, but not limited to, bleeding and/or discoloration as a result of condensation or moisture or water continually contacting the plywood causing staining to upholstery, carpet or other interior surfaces;
(n) Costs or charges derived from inconveniences or loss of use, commercial or monetary loss due to time loss, and any other special, incidental or consequential damage of any kind or nature whatsoever.

**WARRANTY EXCEPTIONS:** The terms, conditions, limitations and disclaimers contained herein cannot be wavered except by the Customer Service Manager of Regal. Any such wavier must be in writing. Neither the dealer, nor the customer, nor any service, sales and/or warranty representative of Regal is authorized to waive and/or modify these conditions, limitations and/or disclaimers.

**GENERAL PROVISIONS:**

**ALL GENERAL, SPECIAL, INDIRECT, INCIDENTAL AND/OR CONSEQUENTIAL DAMAGES ARE EXCLUDED FROM THIS WARRANTY AND ARE TOTALLY DISCLAIMED BY REGAL. IT IS THE INTEREST OF THE PARTIES THAT THE OWNER'S SOLE REMEDY IS THE REPAIR OR REPLACEMENT OF THE VESSEL OR ITS ALLEGEDLY DEFECTIVE COMPONENT PARTS AND THAT NO OTHER LEGAL OR EQUITABLE REMEDIES SHALL BE AVAILABLE TO SAID OWNER. SOME STATES DO NOT ALLOW THE EXCLUSION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES SO THE FOREGOING MAY NOT APPLY TO YOU.**

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Regal will discharge its obligations under this warranty as rapidly as possible, but cannot guarantee any specific completion date due to the different nature of claims which may be made and services which may be required. Regal reserves the right to change or improve the design of its boats without obligation to modify any boat previously manufactured. This limited warranty gives you specific legal rights, and you may also have other rights which may vary from state to state. Regal shall in no way be responsible for any repairs not **PRE-AUTHORIZED** by a Regal Customer Service Manager or repairs performed by a repair shop not **PRE- AUTHORIZED** by a Regal Customer Service Manager.

# Safety On Board

Safety awareness can't be over emphasized. Safety on board needs to be the skippers number one priority. In this manual you will find many safety precautions and symbols to identify safety related items. Heed all safety precaution information. Remember, the skipper is responsible for the safety of his passengers and crew.

## SAFETY LABELS

### Safety Precaution Definition

Safety precautions are stated as caution, warning and danger signal words. They are highlighted in this manual by font design and symbol usage. Also, a notice heading is included which provides operation and maintenance information ***but is not hazard-related.***

**Become familiar and understand all safety precaution labels!**

**DANGER**

Immediate hazardous situation that, if not avoided, **will** result in death or serious injury.

**WARNING**

Potentially hazardous situation that, if not avoided, **could** result in death or serious injury.

## CAUTION

Indicates a potentially hazardous situation or unsafe practice that, if not avoided, **may** result in injury or property or product damage..

## NOTICE

General or specific information which is important to correct operation or maintenance, **but is not hazard related.**

### Precautionary Labels

Read and understand all safety labels affixed to your Regal boat. Most of the safety labels are found close to the helm, aft cockpit and or swim platform. The location of the labels may vary by model. The label list does not cover everything! Use common sense to analyze the result of an action on board your vessel. **Always think safety first!**

## NOTICE

DO NOT REMOVE OR COVER ANY PRECAUTIONARY LABELS.
KEEP HARSH CHEMICALS AWAY FROM LABELS.
IF A LABEL BECOMES ILLEGIBLE, CONTACT YOUR REGAL DEALER
FOR ORDERING REPLACEMENTS.

# GENERAL BOATING SAFETY

We understand that you are eager to get your Regal boat on the water. However, we strongly suggest that you thoroughly familiarize yourself and friends or members of your family with safe boating practices before setting out.
Remember, that along with the freedom and exhilaration of boating comes the responsibility that you have for the safety of your passengers and other boaters who share the water with you.
Boating regulations vary from state to state. Check with your local state and local authorities for the regulations pertaining to your area.

- Check with local weather stations, the U. S. Coast Guard, or weather station broadcasts for the latest conditions. Remember getting caught in sever weather is hazardous, Check weather conditions periodically while you are boating and before your outing. If you are forced to operate your boat in a storm condition, take common sense precautions; wear PFD's, store gear, reduce speed and head for safe refuge.

- It is best to avoid operating your boat in foggy weather. When fog sets in, take bearings, log courses and speeds. You are required to emit a five second blast from your horn or whistle once every minute. Also, have your passengers wear PFD's and observe for oncoming vessels.

- Operate in shallow water presents a number of hazards including sand bars and water levels influenced by tides. If the vessel strikes an underwater hazard, check for boat and engine damage. If the engine vibrates excessively after striking an underwater obstruction, it may indicate a damaged propeller. If you run aground, seek help by radio or flares.

- Make sure your boat and equipment are in top condition. Do this by frequently inspecting the hull, engine and all the gear.

- You must provide a Coast Guard approved personal flotation device (PFD) for every person on board. These PFD's should be in good condition and easily accessible.
- Insist that non-swimmers and children on board weara PFD at all times. Any time you encounter rough weather conditions, make sure everyone on board is wearing a PFD, including yourself. Instruct your passengers in how to put on their PFDs and be sure they know their storage location on the boat. Remember, in an emergency, a PFD that cannot be quickly located and worn is useless.
- Never allow anyone to sit anywhere on the boat not specifically designed seating. While underway, **ALWAYS** insist passengers sit in the provided seating and set an example by doing this yourself.
- **Use maximum caution when fueling**. **Never** allow any smoke or flame nearby while you are fueling. ALWAYS check for fuel leaks and fumes when fueling is completed.

**WARNING**

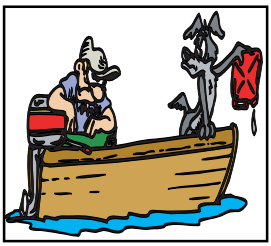
GASOLINE VAPORS CAN EXPLODE.
BEFORE STARTING ENGINE, OPERATE
BLOWER 4 MINUTES AND CHECK
ENGINE COMPARTMENT FOR GASOLINE FUMES
OR LEAKS. RUN BLOWER MOTOR
BELOW CRUSING SPEED.

**WARNING**

USE OF ALCOHOL ENHANCED FUEL, OR ANY FUEL
OTHER THAN GASOLINE,
CAN LEAD TO DETERIORATION OF THE FUEL
SYSTEM COMPONENTS.
CAN RESULT IN FIRE AND POSSIBLE EXPLOSION

♦ **Never drink and drive!** As captain, you are responsible for the safety of your passengers and yourself. Alcohol and boating can be a dangerous combination. **DO NOT** mix them. Alcohol impairs the boat operators ability to make conscious decisions and react to emergency situations quickly.

♦ **Never overload your boat!** An overloaded boat, or one with uneven weight distribution can be difficult to steer.



♦ **Be certain there is enough fuel aboard for your cruising needs.** Include any reserve that might be needed should you change your plans due to weather or emergency. **Practice the "one-third rule:** Use one-third of your fuel going out, one-third to return and keep one- third as a reserve.

♦ Always check the weather before departure. Be particularly cautious of electrical storms and high winds.

♦ Always have up-to-date charts aboard. You will need current charts of the area you'll be cruising to stay on proper course. Charts can be obtained at your closet marine outlet or store or by contacting one of three federal government agencies.

♦ **Always file a float plan.** Leave details of your trip with someone responsible who will be remaining on shore. Include expected return, plus name and phone number of a contact person in case of emergency.

♦ Use care, courtesy and common sense when launching, docking or operating your boat.

- **Learn and obey the "Rules of the Road".** A copy of the "Rules of the Road" can be obtained from the U. S. Coast Guard Auxillary or local Power Squadron.

- In case of emergency: Know the international distress signals if you have a VHF radio aboard. The spoken word **"MAYDAY"** is the international signal of distress and is for emergency use only. Under no circumstances should this word be used, unless there is danger at hand.

- Posted speed limits, swimming areas, "no wake" zones and other restrictions should be red-flagged. They are so noted for a reason. Sensible boat use, plus courtesy, equals enjoyable and safe boating.

- It is your responsibility to stay abreast of all federal, state and local rules, as some laws or regulations may change or be different from state to state. Contact your local boating agencies for updated information.

- We can not stress safety enough! Remember, there are no brakes on your boat, and the water current and wind velocity all affect your ability to respond. The driver must use caution at all times to maintain control of his vessel and especially to maintain a safe distance from other boats and obstacles.

- **Always keep all safety gear in optimum condition.** Pay special attention to attached tags and plates indicating expiration dates on equipment such as fire extinguishers, and personal flotation devices. Encourage a periodic maintenance check on all safety equipment. Contact your Regal dealer or marine professional for more information. Again, remember that the captain is responsible for his passengers and vessel.

# REQUIRED SAFETY EQUIPMENT

## Personal Flotation Devices

All personal flotation devices (PFD's) must be Coast Guard approved, in good working condition, and must be the correct size for the wearer. All PFD's must be readily accessible. This means being able to wear them in a reasonable amount of time in case of an emergency (fire, boat sinking, etc.). They should not be stored or locked in closed areas Also, make sure that all coverings are removed such as plastic from any PFD's. Throwable devices such as a ring buoys need to be available for ***immediate*** deployment. A PFD should be worn at all times when your boat is operating on the water. A PFD may save your life, but it must be worn to do so.

**As minimum U. S. Coast Guard requirements all recreational boats must carry one type I, II, III, or V PFD (wearable) for each person aboard.** See the explaination following for each type. For type V to be counted they must be used according to the label instructions. In addition, all boats over 16' must carry one Type IV (throwable) PFD.

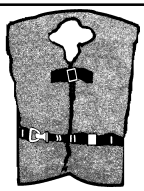
Some states require that PFD's be worn by children of specific ages at all times. Check with state boating agencies for particular requirements in your state before taking children on the water.

Remember PFD's will not necessarily keep you from drowning, even though they are designed to keep a person from sinking. When purchasing PFD's make sure it safely fits the person wearing it. It is a good idea to test PFD's in a lifeguarded shallow pool before venturing on the water.

***Refer to the USCG minimum equipment requirements at the end of this chapter. It is meant to be a guide only. Contact state and local agencies for additional equipment requirements. Remember as the captain of your vessel you are responsible for its safe operation.***

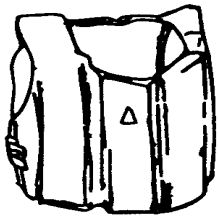
TYPE I PFD

• **TYPE I-** Also known as an off-shore jacket, it provides the most buoyancy. It is a PFD for all waters and is especially useful in rough waters where rescue may encompass additional time. It is designed to turn most unconscious users in the water to a face-up position. Type I PFD is available in adult & child sizes.



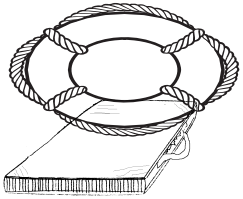
TYPE II PDF
BUOYANT VEST

• **TYPE II-** Also known as near-shore buoyant vest, it is recommended for calm, inland water where rescue time will be minimal. It will turn some unconscious people face-up in the water but not as numerous as Type I. They are available in adult, medium child, along with infant and small child sizes.



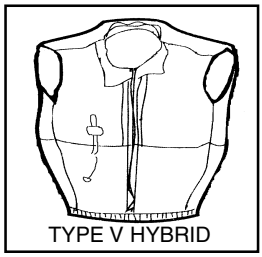
TYPE III PDF

• **TYPE III-** Known as a flotation aid it is good for calm, inland water or where there is a chance for quick rescue. It is designed so wearers can place themselves in a face-up position in the water. The wearer may have to tilt their head back to avoid turning face-down in the water.



TYPE IV PDF

• **TYPE IV-** Intended for calm, inland water with heavy vessel traffic, where help is constantly present. It is designed to be thrown into the water for someone to grab on to and held until rescued. It should *not* be worn.
Type IV includes ring buoys, buoyant cushions, and horseshoe buoys.


TYPE V HYBRID

• **TYPE V-** This is the least bulky of all PFD's. It contains a small amount of inherent buoyancy, and an inflatable chamber. It is rated even to a Type I, II, or III PFD (as noted on the jacket label) when inflated. Hybrid PFD's must be worn to be acceptable.

## Maintaining your PFD's

A PFD is only useful if it is well maintained. Always be aware of PDF age since it has a life expectancy like any other piece of equipment.

√ Do a periodic operation check of all PFD's in shallow water.

√ Be sure to air dry all PFD's after each use. Store in a dry, easily accessible location.

√ Check periodically for broken zippers, frayed webbing, water soaked kapok bags, missing straps, and sewing that has become undone.

√ Clean each PFD with mild soap and water only. Again, let dry sufficiently before storing.

√ Keep PFD's out of grease and oil since they can deteriorate the jacket inner and outer materials.

√ Check any kapok-bagged jackets by squeezing. If you hear air escaping the bag is defective and the PFD should be thrown away.

√ Grab the cover with the fingers. If the cover material rips, the PFD is rotted and should be thrown away.

√ If the kapok bag is hard the PFD should be discarded.

# FIRE EXTINGUISHERS

## General Information

Fire extinguishers are classified by a letter and numeric symbol. The letter references the type of fire the unit is designed to extinguish. (For example, type B extinguishers commonly used on boats are designed to put out flammable liquids such as grease, oil and gasoline. The number indicates the general size of the extinguisher (minimum extinguishing agent weight).

| FIRE EXTINGUISHER CONTENTS | | | | |
|---|---|---|---|---|
| CLASS | FOAM IN GALS. | C02 IN LBS. | DRY CHEM IN LBS. | HALON IN LBS. |
| **B-I** | 1.25 | 4 | 2 | 2.5 |
| **B-II** | 2.5 | 15 | 10 | 10 |

| MINIMUM PORTABLE FIRE EXTINGUISHERS REQUIRED | | |
|---|---|---|
| **VESSEL LENGTH** | **NO FIXED SYSTEM** | **WITH FIXED SYSTEM** |
| LESS THAN 26' | 1 B-1 | 0 |
| 26' TO LESS THAN 40' | 2 B-1 OR 1 B-II | 1 B-1 |
| 40' TO 65' | 3 B-1 OR 1 B-II AND 1 B-1 | 2 B-1 OR 1 B-II |

U. S. Coast Guard approved fire extinguishers are required on all Regal boats. Besides the ***minimum*** Coast Guard requirements always check state and local agencies for additional requirements and equipment. Coast Guard approved extinguishers are hand-portable, either B-I or B-II classification. U. S. Coast Guard approved hand-portable and semi-portable extinguishers contain a metal plate that shows the manufacturers name and extinguisher type, capacity and opearting instructions. They have a special marine type mounting bracket which keeps the extinguisher solidly mounted until needed. The extinguisher needs to be mounted in a readily accessible location but one out of being bumped by people while underway. All approved extinguishers need to have an indication gauge.

## USCG- Approved Fire Extinguisher Types & Features

■ The dry chemical agent is widely used because of its convenience and low cost. The extinguisher canister is filled with a white dry chemical power along with a pressurized gas. It is a good idea to shake this type periodically because they tend to "pack" on the canister bottom.

■ The foam type uses a chemical foaming agent plus water and is best when used for fires involving flammable liquids- solvents, gasoline,oil, grease and various paints. It will work on fires involving rubber, plastics, cloth wood, and paper. It leaves a messy residue. Not for electric fires.

■ The carbon dioxide unit uses CO2 gas under high pressure, with a funnel discharge hoseusually swivel mounted. This extinguisher leaves no residue and does not cause interior engine harm. To ensure workability, weigh the unit annually. A 10% max. wt. variance is allowed.

■ Another type of liquified gas used today is Halon.This gas is colorless and odorless, heavier than air and sinks to the lower bilge to extinguish fires. Since the year 2000 ingredients for Halon has changed to a more environmental friendly formula. Halon is used in portable-hand units along with making up the majority of boat automatic fire extinguishing systems. The canister needs to be weighed once a year. Halon units must feature a dash mount indicator.
*Refer to the information regarding fire prevention in this manual.*

# VISUAL DISTRESS SIGNALS

All vessels used on coastal waters, any of the Great Lakes, territorial seas, and those waters connected directly to them , up to point where a body of water is less than two miles wide, must have Coast Guard approved visual distress signals.

## Pyrotechnic Devices

Pyrotechnic visual distress signals must be Coast Guard approved, be ready for service and must be readily accessible. They all display a marking which is the service life, which must not have expired. A minimum of 3 devices are required for the day and 3 devices for night. Some devices meet both day and night requirements. Pyrotechnic devices should be stored in a cool, dry location. Most of these devices can be purchased in an highly visible (orange) watertight container. Types of Coast Guard approved pyrotechnic distress signals and associated devices are:

- Pyrotechnic red flares, hand- held or aerial type.
- Pyrotechnic orange smoke, hand-held or floating type.
- Launchers for parachute flares or aerial red meteors.

All in all, each distress signal has certain advantages and disadvantages. There is no distress signal that is best under all situations. Pyrotechnics are recognized world-wide as superior distress signals. A downfall is they emit a very hot flame that can cause burns and or ignite flammable materials. Pistol launched and hand-held parachute flares operate consistant with firearms and therefore must be carefully handled. Check with local and state regulations since since some of these device are considered firearms and are prohibited.

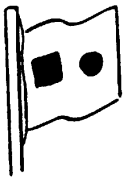
## Non-Pyrotechnic Devices

Non-pyrotechnic devices must all be in serviceable condition, readily accessible, and must be certified by the manufacturer to comply with Coast Guard standards. They include:

- Orange distress flag.
- Electric distress flag.

The distress flag is for day use only. It must be 3 x 3 or larger with a black square and ball on an orange background. It can be spotted when attached to a boat hook, long fishing rod, or paddle with the person waving the flag back and forth overhead.
The electric distress flag is for night use only flashing the international SOS distress signal (..._ _ _ ...).
Under Inland Navigation Rules, a high intensity white light that flashes at regular intervals from 50-70 times per minute is considered a distress signal.
Remember that regulations prohibit the display of visual distress signals on the water under any circumstances except when assistance is required to prevent immediate or potential danger to passengers on a vessel.

# INTERNATIONAL DISTRESS SIGNALS

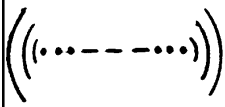


BLACK SQUARE AND BALL ON ORANGE BACKGROUND

CODE FLAGS NOVEMBER AND CHARLIE

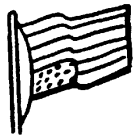
SQUARE FLAG AND BALL

PERSON WAVING ARMS



MORSE CODE S.O.S.

"MAYDAY" BY RADIO



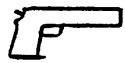
ENSIGN UPSIDE DOWN

PARACHUTE RED FLAG

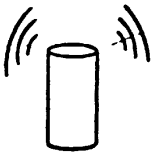
RED METEOR FLARES

SMOKE

FOG HORN SOUNDED CONTINUOUSLY

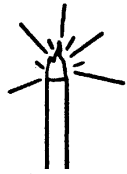


GUN FIRED AT 1-MINUTE INTERVALS



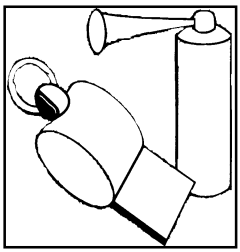
POSITION INDICATING RADIO BEACON

DYE MARKER (ANY COLOR)



HAND-HELD FLARE

# SOUND PRODUCING DEVICES



According to both Inland and International Rules, all boats **must** carry some way of producing an efficient sound signal. If your vessel is 12 meters (39' 4") or longer, a power whistle, power horn or bell must be carried. The bell must be 7 7/8" in diameter.

Boats less than 12 meters a horn or whistle is **recommended** to signal intentions or signal position. The sound signal made in all cases must be capable of a four or six second blast audible for one half mile. See the section discussing bridge and whistle signals for more information.

# RADIO COMMUNICATIONS

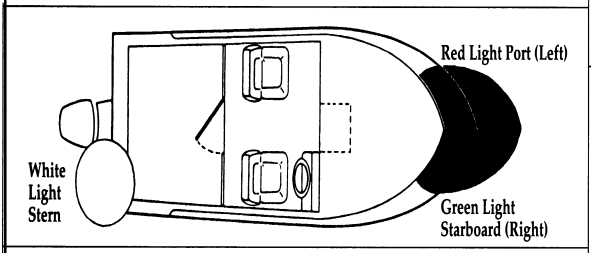
VHF radios are used for distress and ship to shore and ship to ship communications today. Learn the specialized messages such as **Mayday, Mayday, Mayday** is only used when life or vessel is in imminent danger.

# NAVIGATION LIGHTS

The U. S. Coast Guard requires recreational boats operating at night to display navigation lights between sunset and sunrise. Navigation lights help avoid collisions by improving the night visibility of vessels. Red and green directional lights, white stern lights, white masthead lights and white all-around lights must be displayed in specified positions, depending on boat size, and mode of operation. The configuration of visible lights tells and operator the size, direction of travel and means of propulsion (sail, power, rowing or at anchor) of another vessel.

Larger boats are required to carry larger, brighter lights that are visible over longer distances. See the light requirement chart for pleasure craft.

# NAVIGATION LIGHT RULES




| Location of lights on vessel | Visible Range: Less than 12 m. | Visible Range: 12 m. but less than 20 m. | Degrees of arc lights |
|---|---|---|---|
| | in miles | | |
| Masthead | 2 | 3 | 225° |
| All-round | 2 | 2 | 360° |
| Side lights | 1 | 2 | 112.5° each color |
| Stern light | 2 | 2 | 135° |

figure 1

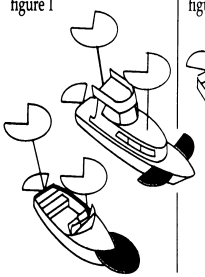


figure 2

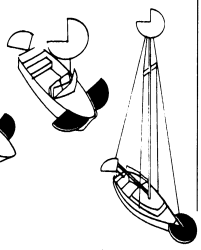


figure 3

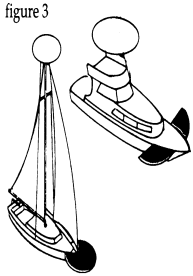


figure 4

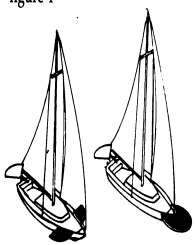


figure 5

figure 6

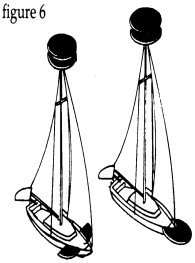
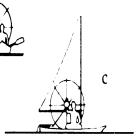


figure 7

a

b



c

*Sailboat using sail alone, less than 7 meters in length:* If impractical to display lights in figure 4, 5 or 6, a single white light may be displayed in time to prevent a collision (figure 7c).

**Row Boats or Paddle Boats**

One all-round white light ready to display in time to prevent a collision (figure 7 a or b).

**Great Lakes**

figure 7d

*Motorboat or sailboat using power on Great Lakes:* The lighting arrangements in figure 7d may be used instead of the arrangements in figures 1 and 2.

**Boats less than 12 meters in length**

*Motorboats or sailboats using power:* The lighting arrangements to figure 1, 2 or 3 may be used.

*Sailboat using sails alone:* The lighting arrangements in figure 4, 5 or 6 may be used.

**Boats 12 meters but less than 20 meters in length**

*Motorboats or sailboats using power:* The lighting arrangements to figure 1 or 2 may be used.

*Sailboat using sails alone:* The lighting arrangements in figure 4, 5 or 6 may be used.

**Location of lights**

Lights should be located as shown in the drawings.

The masthead light (forward white light in figures 1, 2 and 7d) must be at least one meter higher than the colored lights on a boat less than 12 meters in length and at least 2.5 meters above the gunwale on a boat 12 meters but less than 20 meters in length.

**Exceptions**

*Motorboat or sailboat using power, built before December 24, 1980:* The lighting arrangement in figure 1, 2 or 3 may be used. However, the arrangement in figure 3 is not acceptable on a boat that is 12 meters or longer on international waters.

# MARINE SANITATION DEVICES

Recreational vessels under 65' with installed toilet facilities must have an operable marine sanitation device (MSD) on board. Vessels 65' and under may use Type I, II, or III MSD. All installed MSD's must be U.S. Coast Guard certified. Most of the devices are labeled to show conformity to the regulations.

# POLLUTION REGULATIONS

The Federal Water Pollution Control Act prohibits the discharge of oil or hazardous substances which may be harmful into U. S. navigable waters. *Vessels 26' and over* must display a placard at least 5" x 8", made of durable material, fixed in conspicuous spot in the machinery space, stating the following:

**NOTICE**

**DISCHARGE OF OIL PROHIBITED**

THE FEDERAL WATER POLLUTION CONTROL ACT PROHIBITS THE DISCHARGE OF OIL OR OILY WASTE INTO OR UPON THE NAVIGABLE WATERS AND CONTIGUOUS ZONE OF THE UNITED STATES IF SUCH DISCHARGE CAUSES A FILM OR SHEEN UPON, OR DISCOLORATION OF THE SURFACE OF THE WATER, OR CAUSES A SLUDGE OR EMULSION BENEATH THE SURFACE OF THE WATER.

**VIOLATORS ARE SUBJECT TO A PENALTY OF $5,000**

You must immediately notify the U. S. Coast Guard if your vessel discharges oil or hazardous substances in the water. Call toll free 800-424-8802. Report the following information: location, source, size, color, substances and time observed.

## Garbage

The Act to Prevent Pollution from Ships places limitations on the discharge of garbage from vessels. It is illegal to dump plastic trash anywhere in the ocean or navigable waters of the United States. Also, it is illegal to discharge garbage in the navigable waters of the United States, including the Great Lakes. The discharge of other types of garbage is allowed outside certain specified distances from shore as determined by the nature of that garbage.

| Garbage Type | Discharge |
|---|---|
| Plastics- includes synthetic ropes, fishing nets, and plastic bags | Prohibited in all areas |
| Floating dunnage, lining and packing materials | Prohibited less than 25 miles from nearest land |
| Food, waste, paper bags, rags, glass, metal, bottles, crockery | Prohibited less than 12 miles from nearest land |
| Comminuted or ground food waste, paper, rags, glass, etc | Prohibited less than 3 miles from the nearest land |

United States vessels of 26 feet or longer must display in a prominent location, a durable placard at least 4" x 9" notifying crew and passengers of discharge restrictions.

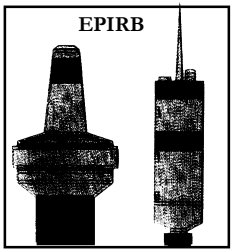
## USCG Minimum Equipment Requirements for Recreational Vessels

| Boat Size in Feet | 16' | 26' | 40' | 65' | 165' |
|---|---|---|---|---|---|
| **Personal Flotation Devices**[1] | One Type I, II, III, or V per person | One Type I, II, III, or V per person plus one Type IV throwable | | | |
| **Fire Extinguishers**[2] | | | | | |
| No Fixed System | One B-I, any type | | One B-II or Two B-I | One B-II and one B-I, or three B-I | One or more B-II (vessels 0-50 tons gross) Two or more B-II (vessels 50-100 tons gross) |
| With Fixed System | No Portables Required | | One B-I | Two B-I or one Class B-II | |
| **Visual Distress Signals** | Night signals required when operating at night | Minimum of three day-use and three night-use (or three day/night combination) pyrotechnic devices[5] | | | |
| **Sound Producing Devices** | Horn or whistle recommended to signal intentions or signal position | | | One bell, and one whistle or horn required to signal intentions or position | |
| **Backfire Flame Arrestor** | One CG-approved device on each carburetor of all gasoline-powered engines built after April 1940, except outboard motors | | | | |
| **Ventilation** | CG standard system required on gasoline powered vessels with enclosed engine compartments built after August 1980 | | | | |
| **Navigation Lights** | | | | | |
| Under Power[3,4] | Sidelights, Stern Light and Masthead[6,7] | | | | |
| Under Sail | Sidelights and Stern Light[6,8] | | | | |
| Rowing | Same as "Under Sail" | | | | |
| At Anchor | All-round light, 2nm (at night) or black anchoring ball (during the day) when outside a designated anchorage | | | | |
| Visibility Range | 1nm Sidelights, 2nm all others | | 3nm Masthead, 2nm all others | | 5nm Masthead, 2nm all others |
| **Pollution Regulations** | "Honor system" (no plaques required) | 5" x 8" Oil Discharge placard and 4" x 9" Waste Discharge placard<br>Vessels over 40' with a galley must have a Waste Management Plan | | | |
| **Marine Sanitation Devices** | Vessels with installed toilet facilities must have an operable, CG-certified Type I, II or III Marine Sanitation Device (MSD). **Subject to local laws!** | | | | Type II or III MSD only |
| **Navigation Rules** | Familiarity with the Inland Navigation Rules required | | | The Inland Navigation Rules ("Rules of the Road") must be kept on board | |

1. *Pfd's must be CG approved, wearable by the intended user and readily accessible.*
2. *Fire extinguishers required on boats with enclosed engine compartments (not outboards), enclosed living spaces or permanent fuel tanks.*
3. *Sailboats operating under engine power are considered power driven and must follow the "Under Power" rules. During the day, motorsailing vessels are required to fly a motoring cone.*
4. *Power-driven vessels under 23' and under 7 knots can substitute a white lantern or torch in place of the required lights.*
5. *Non-pyrotechnic substitutes: 1 orange distress flag (day-use) and 1 electric SOS signal light (night-use).*
6. *All boats under 65' can substitute a single bi-color light for sidelights.*
7. *Boats under power under 40' can substitute a single all-round light for separate stern and masthead lights.*
8. *Boats under sail under 40' can substitute a tri-color light for separate sidelights and stern light.*

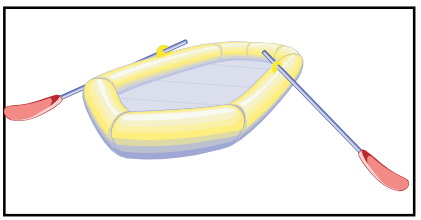
**Additions to theses requirements are prescribed by some individual state laws. Check your state's Boating Safety Handbook for a complete list.**

## Communications




It is a good idea to carry communication gear such as a VHF-FM and/or HF transceivers set up for your operating area. Also, cell phones are useful in many coastal areas. Be sure to carry extra batteries. Also, mainly for offshore vessels, EPIRBs are designed to quickly and accurately alert rescue forces, indicate an accurate distress position, and guide units to the distress scene.These devices operate from satellite signals sent to a ground station where the signal is downloaded. The downside is that they are relatively expensive but they are reliable even when other communications have been exhausted.

## Life Rafts



Inflatable life rafts are recommended for oceangoing and operating a vessel in a large body of water like the Great Lakes. They provide a shelter for extended periods. If used, make sure it is large enough for all aboard and contains the proper emergency equipment pack. Also, get the unit professionally serviced. Make sure the life raft is Coast Guard approved.

**Remember the U. S. Coast Guard requirements are minimal standards.** They are an excellent starting point. Check with local and state boating agencies for further required safety equipment. You are best prepared for emergencies by a well equipped vessel. Don't skimp when purchasing equipment for your boat.!

# EXHAUST & CARBON MONOXIDE

Carbon monoxide(CO) in exhaust can be hazardous. It is important for you and your passengers to be aware of the potential safety hazard created by exhaust gases. Familiarize yourself with the symptoms of carbon monoxide poisoning.
For safety sake avoid the following:

1. Do not allow the boat to remain stationary with the engine idling for an extended period of time.

2. Do not disable the carbon monoxide alarms that come with your Regal boat. Test the unit in accordance with the alarm manufacturers instructions.

3. Do not operate the engine for extended periods of time while in a confined area or where exhaust outlets face a wall or bulkhead.

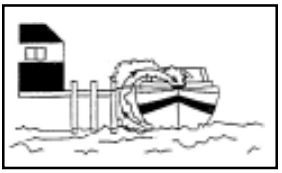
4. Do not operate the engine for an extended period of time with the canvasin the upright and installed position.

5. Have the engine exhaust system inspected when the boat is in for service.

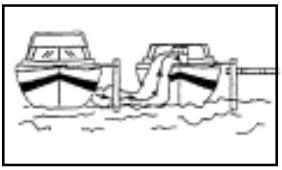
6. Persons sleeping can easily be overcome by carbon monoxide without realizing it. Do not sleep on board while the engine is running.

**WARNING**

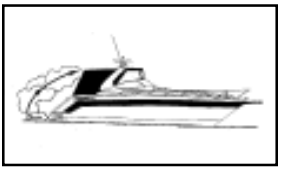
AVOID SERIOUS INJURY OR DEATH
FROM CO POISONING!
DO NOT OPERATE THE BOAT WITH PEOPLE
HOLDING ON TO THE SWIM PLATFORM
WHILE IN THE WATER.



Blockage of exhaust outlets can cause carbon monoxide to accumulate in the cabin and cockpit area even when the hatches, windows, portholes and doors are open.

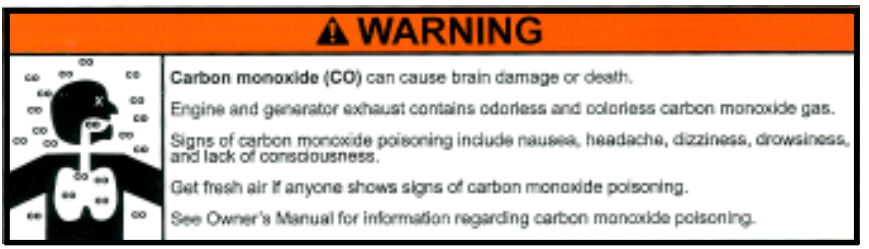


Exhaust from another vessel alongside your boat, while docked or anchored, can emit poisonous CO gas inside the cabin and cockpit areas of your boat.

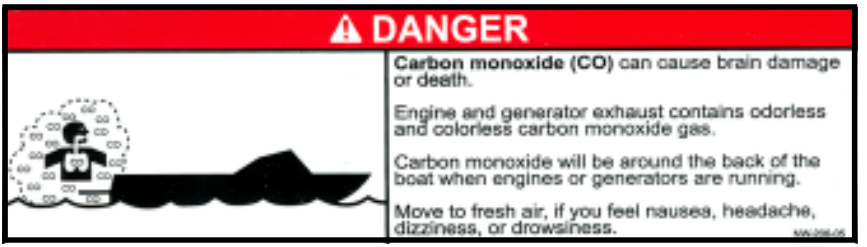


The "station wagon effect" or backdrafting can cause CO gas to accumulate inside the cabin, cockpit or bridge areas when the boat is under-way, using protective weather coverings, high bow angle, improper or heavy loading, slow speeds, or when boat is at rest.

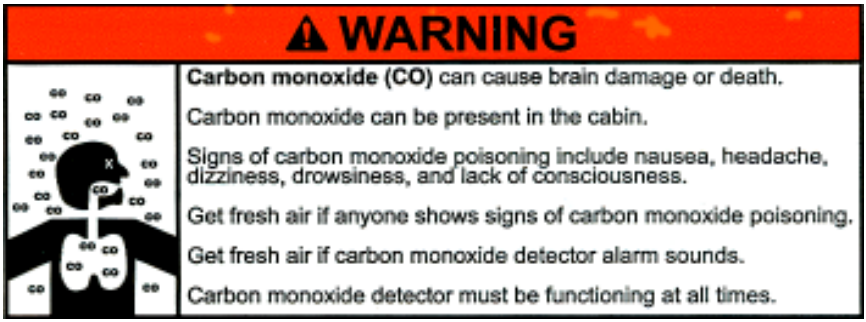
## Typical Carbon Monoxide Label At Helm


⚠ WARNING
Carbon monoxide (CO) can cause brain damage or death.
Engine and generator exhaust contains odorless and colorless carbon monoxide gas.
Signs of carbon monoxide poisoning include nausea, headache, dizziness, drowsiness, and lack of consciousness.
Get fresh air if anyone shows signs of carbon monoxide poisoning.
See Owner's Manual for information regarding carbon monoxide poisoning.

## Typical Carbon Monoxide Label At Transom


⚠ DANGER
Carbon monoxide (CO) can cause brain damage or death.
Engine and generator exhaust contains odorless and colorless carbon monoxide gas.
Carbon monoxide will be around the back of the boat when engines or generators are running.
Move to fresh air, if you feel nausea, headache, dizziness, or drowsiness.

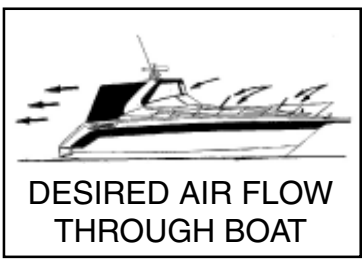
## Typical Carbon Monoxide Label In Cabin Or Head


⚠ WARNING
Carbon monoxide (CO) can cause brain damage or death.
Carbon monoxide can be present in the cabin.
Signs of carbon monoxide poisoning include nausea, headache, dizziness, drowsiness, and lack of consciousness.
Get fresh air if anyone shows signs of carbon monoxide poisoning.
Get fresh air if carbon monoxide detector alarm sounds.
Carbon monoxide detector must be functioning at all times.

Symptoms of excessive exposure to carbon monoxide are:

- Dizziness
- Drowsiness
- Nausea
- Headache
- Ringing in the ears
- Throbbing temples
- Watering, itchy eyes
- Flushed appearance
- Inattentiveness
- Incoherence
- Fatigue or vomiting
- Convulsions

Carbon monoxide accumulation requires immediate attention! Thoroughly ventilate cabin and cockpit areas. Determine the probable source of the carbon monoxide and correct the condition immediately. Regal has installed CO detectors on your boat. Have these detectors professionally calibrated at regular intervals.




To help prevent carbon monoxide accumulation, ventilate your cabin and cockpit while underway. Open a forward hatch, porthole or window to allow air to travel through the boat's interior.

**WARNING**

EXHAUST FUMES CAN KILL!
INSPECT THE EXHAUST SYSTEM
COMPONENTS BEFORE EACH OUTING.

## Each Outing

☑ Make sure all exhaust clamps are in place and secure.

☑ Look for exhaust leaking from the exhaust system components, indicated by rust and or black streaking, water leaks, or corroded or cracked fittings.

☑ Inspect all rubber exhaust hoses for burned or cracked areas. All rubber hoses should feel soft and and be free of kinks.

☑ Visually verify that water exits at the engine exhaust outlet.

☑ Keep an ear tuned for any change in exhaust sound that could indicate an exhaust component malfunction.

**At Least Annually**

☑ Replace exhaust hoses, mufflers, or fasteners if any evidence of cracking, charring or deterioration is found.

☑ Replace the engine water pump impeller along with the plate and housing if necessary. This will help prevent cooling system and in turn exhaust system overheating.

☑ Inspect each of the metallic exhaust components for cracking, rusting, leaking or looseness. Pay detailed atttention to the exhaust manifold, cylinder head, water injection elbows.

# BOATING UNDER THE influence

**WARNING**

FEDERAL LAWS PROHIBIT OPERATING A VESSEL UNDER THE INFLUENCE OF ALCOHOL OR DRUGS. THESE LAWS ARE VIGOROUSLY ENFORCED BY ALL ENFORCEMENT AGENCIES.

Operating a vessel while intoxicated became a specific federal offense effective in 1988. The ruling set federal standards for determining when an individual is intoxicated. If the blood alcohol content (BAC) is .10% (.08 in some states) or higher for operators of recreational vessels being used only for pleasure are subject to a civil penalty up to $1,000 or criminal penalty up to $5,000, one year imprisonment or both. In some states the fines and imprisonment may increase significantly.

The effects of alcohol and drugs account for the highest single cause of marine accidents and deaths. Most deaths in boating accidents occur when someone falls into the water. Balance is one of the first things you lose when drinking alcohol or under the influence of drugs. The problem arises out of not knowing your balance is restricted.

Overall vision is reduced by alcohol especially at night, along with double or blurred vision. Peripheral vision is lessened which restricts seeing vessels or objects on the side. Also, color awareness decreases especially with red and green which happen to be the colors of boat navigation lights, buoys, and channel markers.

Alcohol will greatly increase your heat loss so it increases the effects of hypothermia. Finally, your ability to make correct judgements in emergency situations is greatly reduced. Alcohol takes away the brains ability to process information quickly and delays a persons reaction time. **Don't drink and drive!**

## Alcohol Myths And Facts

**Myth:** Beer is less intoxicating than other alcoholic beverages.
**Fact:** One 12 oz. can of beer has about the same amount of alcohol as a 5oz. glass of wine or a shot of liquor.

**Myth:** Black coffee, fresh air, and a shower will sober the effects of alcohol.
**Fact:** After consuming alcohol time is the only thing that will sober you up. Our bodies average burning 1 oz. of alcohol every hour. If a person is drunk, it will take a person seven or more hours to sober up.

**Myth:** Telling if a person is too drunk to operate a vessel is easy.
**Fact:** Many experienced drinkers have learned to compensate for the visual effects of alcohol and can disguise their drunk condition.

**Myth:** You can judge if you are fit to operate a boat.
**Fact:** Judgement is one of the first elements you lose when drinking.

**BLOOD ALCOHOL CONTENT CHART**

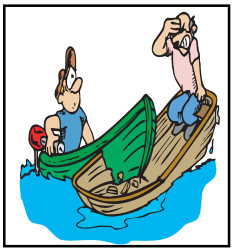
| Body Weight In Pounds | Number of Drinks In A 2 Hour Period (12 oz. beer=5 oz. wine=1 oz. 80 proof liquor) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 100 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 120 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 140 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 160 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 180 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 200 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 220 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 240 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

BAC to .05% — Be Careful- Loss of Judgement & Coordination

BAC .05% to .10% — Abilities Impaired- Accident Chance Increased

BAX. Over 10% — Do Not Operate A Boat- High Accident Risk

# BOATING ACCIDENTS



***The following is a list of common causes of boating accidents.*** Be aware of them and take the necessary steps to ensure that yourself and crew are educated and prepared to act in an emergency.

♦ Mixing boating and alcohol. Remember the skipper is responsible for his boat and crew.

♦ Trying to reach the bow by the deck walk-around while the boat is moving too fast.

♦ Someone sitting on the bow, deck, or swim platform while underway.

♦ Choosing a boating outing day with inclement weather, especially with high winds and thunderstorms in the forecast or staying out when bad weather is approaching..

♦ Disembarking without checking all fluids or systems,and especially fuel system componets.

♦ Not monitoring the boating traffic or possible obstructions around you.

♦ Emergency communications equipment, signaling devices, and navigation lights not working.

♦ Improper boat handling especially high speed turns in rough water. Improper trim.

♦ Being too far from shore with inadequate fuel supply or navigational aids..

♦ Passengers, especially children that are not wearing the proper life saving devices.

♦ Skipper or passengers not seated in the boat.

♦ Running a craft that is mechanically marginal.

## Reporting Boating Accidents

According to the Federal Boat Safety Act of 1971 involving collision, accident or other casualty, the operator must make a formal report within 48 hours to the nearest state boating authority when the incident involves:

1. Death
2. Injury requiring treatment other than first aid
3. The disappearance of someone from a boat under death or injury circumstances.

A formal report must be made within 10 days for accidents involving more than $500 damage or complete loss of vessel.
For information regarding accident reporting, plaease call the **Boating Safety Hotline** at 800-368-5647.

## Rendering Assistance

The operator of a vessel is obligated by law to provide assistance that can be provided safely to any individuals in dangerous situation on the waterways. The operator is subject to fine and or imprisonment for failure to do so. Move cautiously and think before acting.

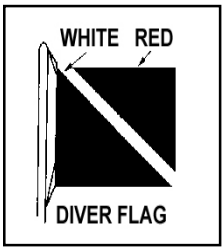
**DANGER**

AVOID BODILY INJURY OR DEATH!
STAY SEATED IN THE COCKPIT
WHILE THE BOAT IS RUNNING TO AVOID FALLING.

# WATER SPORTS

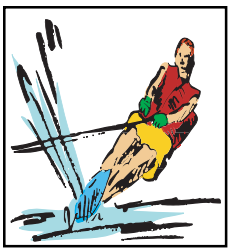
Besides learning the safety precautions for safe boating, as well as understanding and knowing required rules and regulations, you are obligated to be particularly careful around other water sportsman, such as scuba divers, water skiers, wakeboarders, and fisherman.

## Skin & Scuba Divers




Whenever you see a "Diver Down" flag, maintain a distance of at least 100 feet on inland waters. In bays and open waters stay 300 feet away. The flag indicates a diver in the water. If a diver is operating from your boat, be certain to use this flag and post a lookout on board for a divers air bubbles. Sometimes divers stray from the flag area.

## Water Skiers & Wakeboarders



For information on water skiing and how to get started, we recommend you contact the American Water Ski Association, P. O. Box 191, Winter Haven, Florida 33880. They offer pamphets and instructional materials.

For wakeboarding information there are numerous training schools throughout the country along with instructional videos and the internet.

General safety procedures for towing skiers and wakeboarders include the following:

♦ Know your hand signals and make sure all your passengers know them. See the illustration.

♦ Do not allow non-swimmers to ski or wakeboard. You're asking for trouble!

♦ Always have an observer onboard whose sole job is to watch the skier/wakeboarder and communicate with the driver.

♦ If you plan to do alot of sking/wakeboarding, it is advisable to have a ski pylon and driver's rear view mirror installed.

♦ Acquaint yourself with the ski site before skiing/wakeboarding.

♦ Follow the speed limits and all posted signs- i.e. no wake, etc.

♦ Keep the boat away from swimmers or other people in the water.

♦ Avoid running near the shoreline or in heavily congested areas with skier/wakeboarder in tow.

♦ Do not allow skier/wakeboarder to spray fisherman or other parties.

♦ Keep the engine speed steady while towing a skier/wakeboarder.

♦ Make wide turns with skier/wakeboarder in tow.

♦ Instruct skier/wakeboarder in case of a fall to raise his ski in the air to ensure his visibility.

♦ Always turn your engine off when the skier/wakeboarder is near the platform or transom.

♦ If the skier falls, return promptly to retrieve him, circling wide from the starboard side, to bring his rope within easy grasp. See illustration.

## Ski Tow

Insert the ski tow line as shown for safe operation. It provides a tight fastening for sking while allowing the line to be readily removed if needed. Check your tow line for adbrasion and tow ring for tightness periodically. The illustration is a typical hook-up.

**WARNING**

AVOID SERIOUS INJURY OR DEATH!
DO NOT USE SKI TOW FITTING
FOR LIFTING OR PARASAILING.
FITTING COULD PULL OUT OF DECK

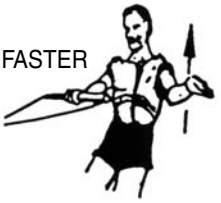
## Swim Platform

**WARNING!**
**MAXIMUM CAPACITY OF SWIM PLATFORM 500 POUNDS 226 KG**

On integrated or extended swim platforms you should make periodic inspections of the swim ladder and hardware that supports the platform to ensure that all connections and fittings are tight and in good When fishing from your boat, never anchor in a shipping channel or tie up to any navigational aids. These must be kept clear of at all times. Use heed when operating the boat in reverse to insure that water does not accumulate excessively on the platform or transom, especially in rough seas or strong currents. ***Do not exceed the platform recommended maximum capacity label!*** Typical label shown above.

# WATER SKI & WAKEBOARD SIGNALS

FASTER

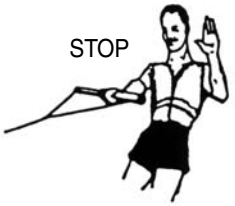


SLOWER

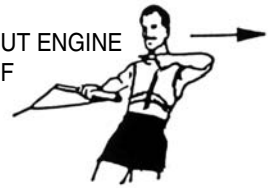
SKIER OK
AFTER FALL

CAUTION OR FALLEN
SKIER; PICK ME UP

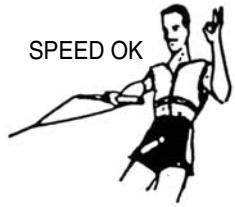
STOP



SHUT ENGINE
OFF

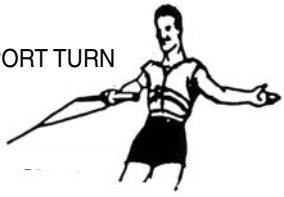


SPEED OK

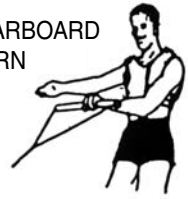


RETURN TO DROP
OFF AREA

PORT TURN



STARBOARD
TURN



**WARNING**

AVOID SERIOUS INJURY OR DEATH!
DO NOT OPERATE THE BOAT
WITH PEOPLE IN THE WATER
OR ON TOP OR HOLDING ON TO
THE SWIM PLATFORM STRUCTURE OR HARDWARE.

## Fishing

Most boaters fish from time to time. With the propulsion systems of today it is possible to fish in out-of-the-way places. When crusing, stay clear of fisherman. They may have lines or nets out which might be cut or get caught in your propeller if you come too close. Slow down when approaching fishing boats.

Do not return to cruising speed until the boats have been passed. If a fishing boat should be anchored, a large wake could flip or swamp the boat, upset fishing gear, pull the anchor loose from the bottom or worse yet cause someone to fall overboard.
When fishing from your boat, never anchor in shipping channel or tie up to any navigational aids. These must be kept clear of at all times.
Be sure to carry a chart of the area and be on the lookout for shallow water and hidden obstructions. Pick up a local tidal chart if appropriate so you do not end up grounded.

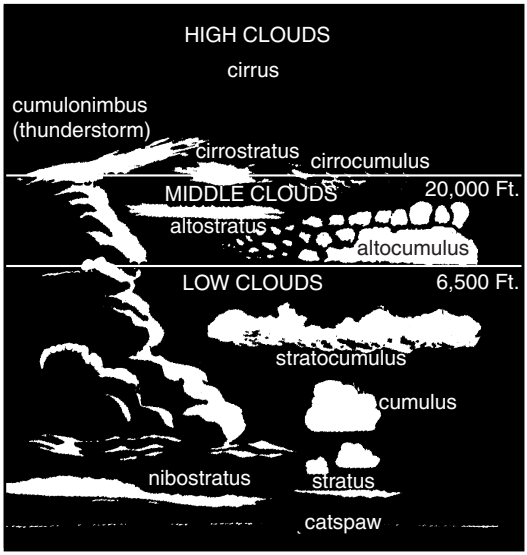
***Remember, the skipper is responsible for any damage caused by his wake. Use common sense and be a responsible captain!***

# CHAPTER 1

# WEATHER & WATER CONDITIONS

Before a boating outing check the weather conditions. As we all know the weather can change rapidly in many parts of the country. It does so sometimes without being predicted. NOAA weather radio reports are continuously available on designated frequencies installed on VHF radios and various handhelds. Also, many local radio stations carry weather reports .

## Cloud Formations




Clouds indicate the type of current weather and upcoming changes in the weather. Knowing the type of cloud formations can assist you in choosing the appropriate boating day or if already on the water will help you understand any upcoming weather changes

Flat clouds (stratus) normally indicate stable air. Cumulus clouds indicate unstable air. Many times a "cottonball" or cumulus cloud builds vertical height in the afternoon and the result is a thunderstorm with increased winds and waves; sometimes these storms are quite violent. You can find additional information on weather (meteorology) at your local library.

## Waves & Fog

As the wind blows across water waves are created. The stronger the wind and increased distance across the water enlarges the wave action.
Other factors that can cause problem situations for vessels are fog, currents, and tidal changes.
Fog can develop inland on clear, calm mornings. Coastal areas see large "blankets" of fog roll in and stay for extended time periods causing sometimes hazardous navigation conditions. If you are caught in the fog, do not panic. Think of the best plan of action and proceed carefully. If you are limited in navigation equipment ***at the first sign of fog*** proceed to the nearest shoreline and wait until the fog lifts.
Boats equipped with navigation equipment, local waterway experience and charts should proceed to a safe harbor. Use extreme caution, signal as needed, and reduce to a speed where you can stop within half of your forward vision range.

***If foul weather catches you at sea do the following:***

1. Slow down. Proceed with caution and put on your life vests.

2. Try to reach the nearest safe shoreline.

3. Navigate your vessel slowly into the waves at a 45 degree angle.

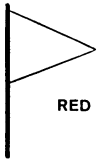
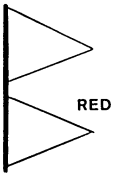
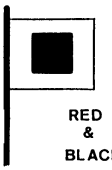
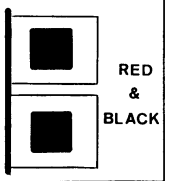
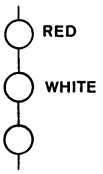
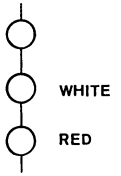
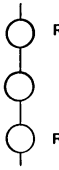
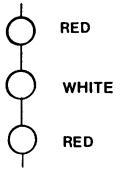
4. Passengers should sit low in the center of the vessel.

5. Monitor your bilge pump. Make sure sump stays free of water.

6. Secure loose gear. Make ready emergency equipment.

7. If the engine stops, throw the anchor over the bow. If needed use a sea anchor. Never anchor off the stern.

## Marine Weather Symbols

| | SMALL CRAFT | GALE | STORM | HURRICANE |
|---|---|---|---|---|
| DAY FLAGS |   |   |   |   |
| NIGHT LIGHTS |   |   |   |   |

Although the National Weather Service has discontinued the use of the day flags and night lights, many marinas and ports of call still use them.

# *Rules Of The Road*

## NAVIGATION RULES DEFINED

The Navigation Rules set forth actions to be followed by boats to avoid collision. They are referred to as the "Rules of the Road". There are two main parts referred to as the inland and international rules. The inland rules apply to vessels operating inside the boundaries of the United States. The international rules (referred to as72 COLREGS) apply to vessels operating on the high seas and all connected waters outside the established demarcation boundaries. Most navigational charts show the demarcation lines by red dotted lines and are published in the navagation rules. Remember to consult state and local agencies since areas such as "no wake zones" , swimming beaches, "diver down flag" and inland landlocked lakes fall under their juristriction. This section is only an introduction to the "rules of the road". We strongly recommend additional training before getting behind the "wheel" of your boat.

**WARNING**

AVOID INJURY AND DEATH!
FOLLOW THE NAVIGATION"RULES OF THE ROAD"
TO PREVENT COLLISIONS.

You can order the Inland & International Navigation Rules from:
Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402
Tel: (202-512-1800) Fax:(202-512-2250

# CHAPTER 2

# NAVIGATION RULES

## Right Of Way

1. Cross waves at right angles.

2. When caught in heavy water or squalls, head either directly into the waves or at a slight angle. Reduce speed, but maintain enough power to maneuver your boat safely.

3. Keep your speed under control. Respect the rights of other boaters engaged in all water sports. Give them a "wide berth".

4. Whenever meeting a boat head on, keep to the right where possible.

5. When two boats cross, the boat to the right (starboard) has the right of way.

6. When overtaking or passing, the boat being passed has the right of way.

***In general, boats with less maneuverability have right-of-way over more agile craft. The skipper must keep his craft clear of the following vessels:***

• A vessel not under command or aground; due to their circumstances, these vessels have no maneuverability.

• A vessel restricted in its maneuverability; these vessels usually are performing work which limits their maneuverability such as surveying, dredging, laying pipe or cable, or servicing navigational markers among others.

• A vessel engaged in fishing; these include boats fishing with lines, trawls or nets, but not trolling lines.

• Sailboats; they have the right-of-way over powerboats. However, if a sailboat is using a prop to move forward, it is considered a powerboat even if the sails are up.

• Remember the unwritten "rule of tonnage". Basically a smaller tonnage vessel should take every effort to avoid close quarters with a larger tonnage vessel. One way to accomplish this is to have a designated human lookout to "eyeball" the horizon for any developing collision course.

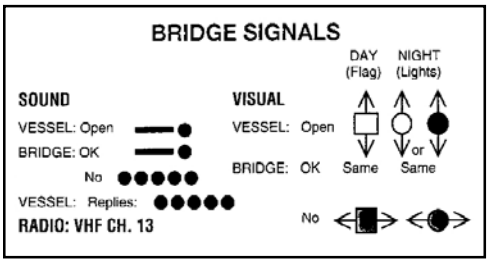
• Use defensive driving skills on the waterway just as you do on the roadway. The other vessel may not know the "rules of the road" Be alert and ready to take immediate action.

• If a collision course is unavoidable neither boat has the right of way. Both boats must react to avoid an accident according to the rules of the road.

## Signals

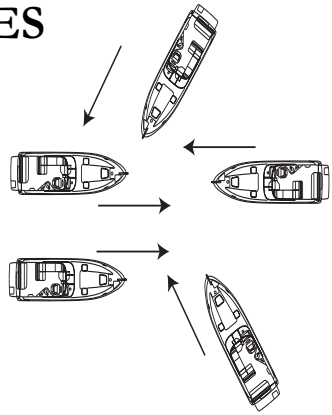
**WHISTLE SIGNALS**

**ONE LONG BLAST: Warning signal**
**(Coming out of slip)**
**ONE SHORT BLAST: Pass on my port side**
**TWO SHORT BLASTS: Pass on my starboard side**
**THREE SHORT BLASTS: Engine(s) in reverse**
**FOUR OR MORE BLASTS: Danger signal**

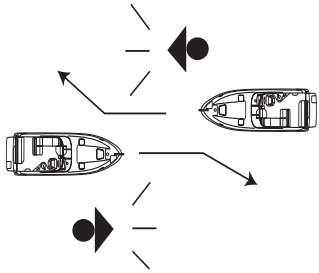


# NAVIGATION RULES

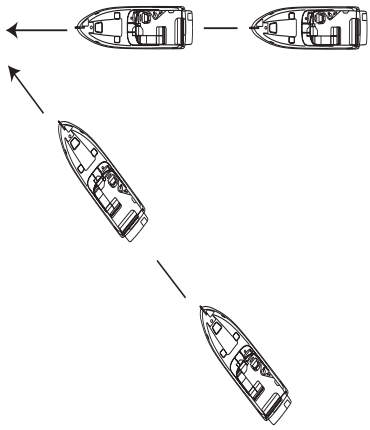
The Navigation Rules set forth 3 types of crossing situations- crossing, meeting, and overtaking. In each case, both boats are governed by special procedures.



In a head-on meeting, both vessels must sound a single blast to give way toward starboard and pass to port.

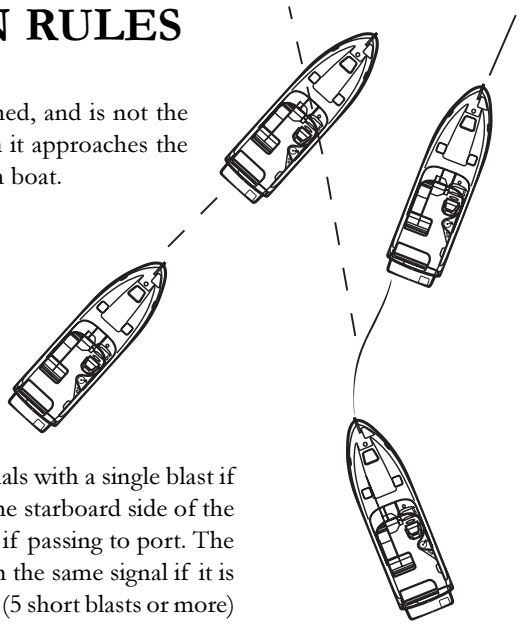


These rules appear when there is a risk of collision. In a crossing situation be aware of the other craft's position. For safety, there should be a noticeable change in the angle, bow or stern; a gradual change in position indicates possible danger.

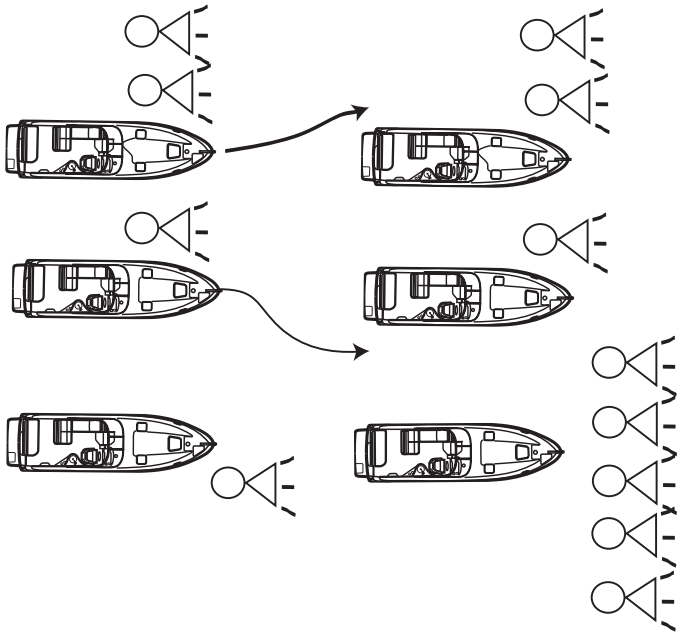


# NAVIGATION RULES

An overtaking boat is burdened, and is not the priveleged craft, enen though it approaches the danger zone of the overtaken boat.



The overtaking boat first signals with a single blast if that boat desires to pass on the starboard side of the boat ahead, or a double blast if passing to port. The overtaken craft responds with the same signal if it is safe, or with the danger signal (5 short blasts or more) if unsafe. The boat overtaking must not pass unless the appropriate signals are sounded.



## Navigation Aids

Navigation aids are placed along coasts and navigable waters as a guide for mariners in determining their position in reference to land and hidden danger. Each aid provides specific information. They form a continous system of charted markers for accurate piloting on paper and on the water.

Nautical charts are provided by the National Ocean Service (NOS) and are distributed nationwide through marinas and outlet stores. These charts show the geography of the coast, water depth, landmarks, navigation aids (buoys and markers), marine hazards, and port facilities. Use only up-to-date charts for navigation. We recommend when purchasing a chart to look for the weather resistant ones.

Buoys provide a roadmap to keep the skipper on course and to avoid hazards. Buoys are identified by light, shape, color and in severe weather conditions by sound.

Buoys or beacons called lateral markers indicate the port and starboard sides of the waterway to be followed. U. S markers follow the buoyage system known as Red Right Returning. When returning from sea or traveling upstream, the green markers are to port (on your left) and the red markers are to the starboard side (on your right). When traveling downstream or out to sea the marker color would be reversed.

Before operating your vessel, learn to identify the various navigational aids such as lateral aids, mid-channel markers, information and regulatory markers.

**NOTICE**

SKIPPERS MUST NOT RELY ON BUOYS ALONE
TO MARK THEIR POSITION.
SEVERE WEATHER CONDITIONS
AND WAVE ACTION CAN ALTER A BUOYS POSITION.
NEVER TIE UP TO A BUOY.
IT IS ILLEGAL AND EXTREMELY DANGEROUS.

# LATERAL AIDS

Port Side
Odd Numbers

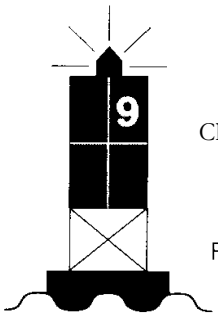



Chart Symbol

G "9"
Fl G 4 sec

Lighted Buoy
(Green Light Only)

Starboard Side
Even Numbers

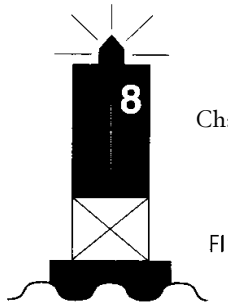



Chart Symbol

R "8"
Fl R 4 sec

Lighted Buoy
(Red Light Only)

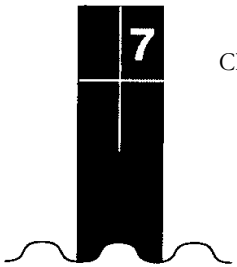



Chart Symbol

C "7"

Can Buoy
(Unlighted)

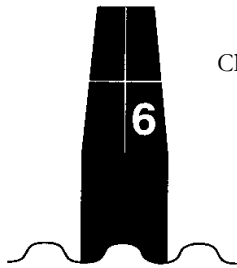



Chart Symbol

N "6"

Nun Buoy
(Unlighted)

Chart Symbol

G "1"

Daymark

Chart Symbol

R "2"

Daymark

# MID-CHANNEL MARKERS

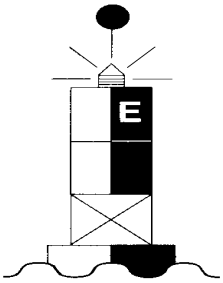
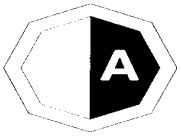



Chart Symbol

RW "E"
Mo (A)

Chart Symbol

RW
SP "G"

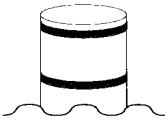



MR

Chart Symbol

RW
"A"

# REGULATORY MARKERS



Diamond Shape
Warns Of Danger

Diamond Shape With Cross-
Boats Keep Out

Circle Marks Area Controlled
As Indicated

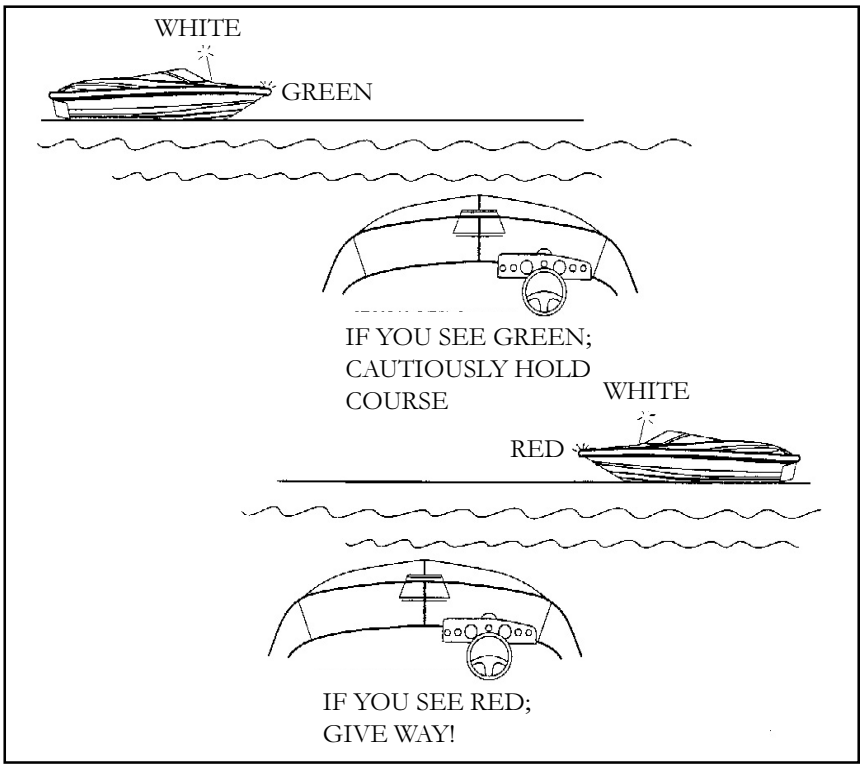
For showing information such as
locations, distances and directions

# NIGHT RUNNING

Boats operating between sunset and sunrise ( hours vary by state), or in conditions of reduced visibility, must use navigation lights. Nighttime operation, especially during bad weather and fog, can be dangerous. All Rules of the Road apply at night, but it is best to slow down and stay clear of all boats regardless of who has the right-of-way.

To see more easily at night, avoid bright lights when possible. Also, it is helpful to have a passenger keep watch for other boats, water hazards and navigational aids.

To determine the size, speed and direction of other vessels at night, you should use the running lights. A green light indicates starboard side, and a red light indicates port side. Generally, if you see a green light, you have the right-of-way. If you see a red light, give way to the other vessel.



# BRIDGE CLEARANCE

Be aware that your vessel requires a specified bridge clearance height. This height is a measured estimate from the waterline to the top of the highest object usually the radar arch, radar or the masthead light depending on what arch equipment is installed. The estimated height can change because of variances in the loaded condition of the vessel. Consult the bridge clearance specifications located in Chapter 12 (technical information section). An easy way to measure bridge clearance is to have someone place a long straightedge such as a piece of wood at a 90 degree angle across the highest point of the boat. Then with a tape rule measure the distance straight down to the waterline. Take this measurement with the fuel and water tanks 1/2 full and only 1 person besides yourself on board. This will give you a safe measurement. As your boat is loaded down with people the bridge clearance will become somewhat lower.

Some bridges are tendered. Know and use the proper bridge signals when approaching these bridges (see bridge signals in this chapter). You can also monitor and communicate on channel 13 of a VHF radio for bridge information in most domestic locals. Other bridges are marked with a clearance measurement and you are on your own. After determining your vessel will clear the bridge proceed with caution at a safe idle speed. Keep your eye on vessel traffic at all times in order to react quickly. Resume a safe speed once clear of the bridge structure and acknowledgment of clear visibility.

***Use common sense regarding bridge clearance because bodily injury and property damage could result if a mishap occurs with a bridge structure.***

# Engines & Controls

## ENGINE

### Engine Basics

It is important that you read the engine manual carefully and become completely familiar with the operation as well as necessary maintenance on the engine and propulsion systems. Pay careful attention to the sections on winterization if you live in freezing climates. Extensive damage can result if proper winter storage is not followed. Your Regal dealer has been factory trained on Regal boat systems. Consult your Regal dealer for futher information regarding technical issues and parts..

**WARNING**

AVOID SERIOUS INJURY OR DEATH!
READ ALL MANUFACTURERS ENGINE AND
PROPULSION OWNER MANUALS
BEFORE OPERATING YOUR VESSEL.

### Engine Mounts

The engines are placed in the boat on a set of metal or wooden platforms called mounts. These rubber isolation mounts keep the engine from moving laterally and athwartships (right angles to the centerline). The mounts help reduce the vibration caused by the engine and drive. Periodically, the mount hardware should be checked for tightness.

## Engine Alignment

The engine uses a rubber splined hub to which the outdrive driveshaft is attached. This alignment specification between the engine and outdrive needs to checked periodically. It should be checked after each 50 hours of operation or if the vessel has run aground or hit a submerged object. Alignment should be checked by a Regal dealer or marine professional since special tools and procedures are required.

## Engine Removal

In the event the engine or outdrive (sometimes referred to as sterndrive) requires major service where it needs to be removed, consult your Regal dealer.

## Engine Ventilation

Ventilation systems are required for engine compartments. Most Regal boats feature a set of deck vent shrouds which supply fresh air constantly to the engine compartment. A powered blower motor connected to ducts in the lower one third of the bilge evacuates air to the atmosphere. Understand the following warning:

**WARNING**

GASOLINE VAPORS CAN EXPLODE. BEFORE STARTING ENGINE, OPERATE BLOWER 4 MINUTES AND CHECK ENGINE COMPARTMENT FOR GASOLINE LEAKS OR VAPORS. RUN BLOWER BELOW CRUSING SPEED.

All owners are responsible for keeping their boat's ventilation systems in operating condition. This means making sure the ventilation openings are obstruction free, ducts are not blocked or tore, blower operates properly and any worn parts are replaced with approved marine parts.

**WARNING**

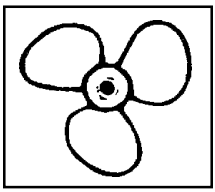
PREVENT INJURY OR DEATH!
USE ONLY APPROVED MARINE REPLACEMENT PARTS THAT ARE IGNITION PROTECTED.

# PROPULSION

## Stern Drive

It is important that you read the stern drive manual carefully and become familiar with the operation as well as necessary maintenance on the drive unit components. Pay careful attention to the sections on winterization if you live in freezing climates. Extensive damage can result if proper winter storage is not followed. Refer to the maintenance section of this manual for more information or call your nearest Regal dealer.

## Propellers



We have carefully tested and chosen the propellers to give your stern drive boat the best possible performance and have allowed for the additional weight in equipment that might be added to the boat. It is a good idea to carry a spare set of propellers and hand tools in order to handle an emergency propeller change. Refer to the engine manual for proper procedures since each stern drive application is unique. Call a marine professional or your Regal dealer for further information.

**DANGER**

PREVENT INJURY OR DEATH!
SHUT OFF ENGINE NEAR SWIMMERS
TO AVOID ROTATING PROPELLER BLADES.

## Propeller Checklist

***At least twice a year check the propeller for:***

- ☑ Loose, missing or corroded hardware.
- ☑ Knicks, dings or missing propeller material
- ☑ Bent propeller blades.
- ☑ Objects wrapped around the prop such as fishline.
- ☑ Decomposing propeller blades (electrolyisis symptom).
- ☑ Aluminum prop with paint coming off near blade tip (ventilation symptom).
- ☑ Check the propeller pressed in rubber hubfor slippage.

Contact a propeller shop or your closest Regal dealer if any of the above symptoms exist. They have special equipment to refurbish both stainless steel and aluminum propellers. After making any blade alternations the propellers are "repitched" in special prop jigs.

# CONTROLS

## Instrumentation

The helm station is equipped with a complete set of instruments that allows you to monitor the condition of the engines. Close observation of the gauges may save the engines from damage.
The dash instrument panel is powered and protected by a main 20 amp ignition breaker located at the dash itself. It is connected through the key switch.
The engine wiring is protected by a main breaker with a push button reset mounted on the engine. Refer to your specific engine manual for information on type and location. If a breaker "pops" figure out the reason why before resetting it.
Each dash switch is also protected by a breaker.

**NOTICE**

WITH BATTERY SWITCH IN THE "OFF" POSITION
THERE IS NO POWER TO THE DASH

Your boat may feature an instrument panel containing two large multi-function gauges along with a trim and depth gauge. Otherwise, your dash will feature individual gauges. We will show overviews of both gauge layouts in the following pages along with descriptions of individual gauge functions regardless of their dash location.

# TYPICAL HELM

## Gauge Operation

Following is a general description of gauge operations. An alert skipper monitors his gauges constantly for any system malfunctions. The gauges are lighted for night operation. Gauges are an early warning system for engines just as they are for an automobile. For more information refer to the engine manufacturer's manual in the owner's pouch.

**Tachometer:**

The tachometer indicates the speed of the engine in revolutions per minute (rpm). The tachometer allows you to monitor the engine speed so you can be sure not to exceed the recommended limits of the engine manufacturer. *Selected* tachometers have built in hour meters.

**Oil Pressure:**

The oil pressure gauge indicates the pressure of the oil inside the gengine lubrication system. A drop in oil pressure may be an indication of a low oil situation or a leak. Continued operation of the engines with low oil pressure could lead to engine damage. Refer to appropriate manufacturer's engine manual for more information..

**Temperature Gauge:**

The temperature gauge monitors the cooling system of the engine. A sudden increase in the temperature could be a sign that the engine cooling system is malfunctioning. Shut down the engine immediately and investigate the problem. Consult your engine manual for allowable limits.

**Fuel Gauge:**

The fuel gauge indicates the level of fuel inside the fuel tank(s). It is a good idea to keep the fuel tanks "topped off" when possible to reduce fuel vapors inside the tank. It is also a good idea not to run the fuel level close to empty in order to leave an adequate "safety" factor.

**Volt Meter:**

The volt meter monitors the battery condition as well as the alternator performance. Normal voltage is between 12.0 and 15.0 volts. Readings outside of this range may indicate a charging system or battery problem.

**Trim Gauge:**

This gauge measures the stern drive tilt and indicates the relative position of the bow, up or down when the boat is on plane. The power trim normally begins in the down position when used to accelerate the boat onto a plane position.The gauge can be helpful in achieving the most economical running condition.

**Depth Gauge:**

The depth gauge is standard equipment on selected models. The depth gauge indicates the water depth under the keel of the boat. It features an shallow water alarm. By monitoring the water depth closely, damage to props and underwater hardware can be avoided.

**Speedometer:**

The speedometer used on selected models indicates kilometers per hour and miles per hour by measuring water pressure against a small hole in a device mounted under the boat. Consult the owner's packet for further information.

## Optional Gauges & Indicators

The ***optional*** gas vapor detector determines if there is a level of gasoline vapors that is unsafe in the engine room of the boat. If installed, turn on the unit and wait about one minute for it to do its safety test. If all is well it will give you a green light. You must run the test before you start the engines. In the event you don't get a green light, you must investigate the bilge of the boat for gas fumes or signs of a fuel leak before starting the engines. If uncertain, consult a marine service professional.

The ***optional*** automatic fire extinguishing system utilizes an instrument display unit (gauge) that provides the operator with a system status of charged or uncharged condition by an audible alarm. With the ignition turned on the indicator light shows system is charged and operating properly. With the ignition on and no light indicates the system has discharged. If the system should discharge the ignition system will be instantaneously interrupted. Should this occur shut down the engine, ventilation blower and any electrical system components. Investigate the source of the shutdown immediately and take appropriate action. For more information, refer to the owner's pouch.

## Audible Alarms

Most Mercruiser and Volvo engines use audible alarms. They are designed to use sensors which pick up deviations from the normal operating parameters. Oil pressure and temperature sensors send a signal to a buzzer under the dash which sounds a high pitched alarm indicating a possible problem. In addition to the dash, some engines use buzzers at the engine itself.

**NOTICE**

PREVENT POSSIBLE ENGINE DAMAGE.
WHEN AN AUDIBLE ALARM SOUNDS
SHUT DOWN ENGINE IMMEDIATELY,
INVESTIGATE & REPAIR THE PROBLEM.

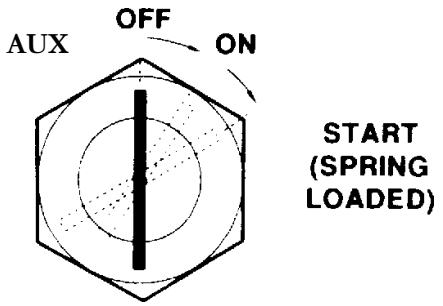
On start up it is not unusual to hear an audible alarm sound when cranking the engine over. This occurs normally because it takes a second or two to build up the engine oil pressure. Then the alarm will stop. A seasoned skipper monitors his instrument panel often while cruising.

## Instrument Lighting

Each gauge is designed with back lighting so it can be seen at night. On most models you activate the instrument lighting by energizing the navigation light switch. Eliminate condensation inside the gauges by activating the gauge lights.

## Ignition Switch

The ignition switch features 4 positions. In a clockwise direction they are auxillary, off, run, and start. The start position is spring loaded and the key should be held in this position to engage the starter. Once the engine has started release the key from the start position. The electrical system will then be energized in the run position. The auxillary position is counterclockwise from the "off" position. When it is activated the stereo and dash switches can be activated without the instrumentation engine ignition wiring and engine warning buzzers being energized. Be a smart skipper and remove the ignition key from the ignition switch with children aboard and/or when there are people in the water.

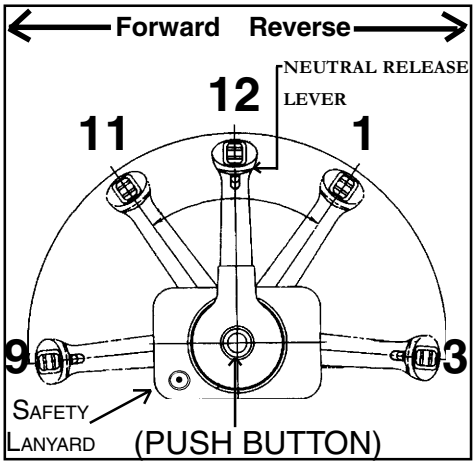



**TYPICAL IGNITION SWITCH WITH 4 KEY POSITIONS**

**NOTICE**

TO AVOID DRAINING THE BATTERY
DO NOT LEAVE IGNITION KEY
IN THE "ON" POSITION
WITH THE ENGINE NOT RUNNING.

# REMOTE CONTROL




Your vessel uses a single lever remote control similar to the illustration. To help visualize the operating principals we have used a clock mode. The lever in the straight-up or 12 o'clock (neutral) position is detended and features a push button (see illustration)which allows advancing the throttle for neutral or starting the engine without engaging the gearshift. This feature is useful when trying to start a cold engine.

***Pushing*** the throttle lever forward from the neutral 12 o'clock position to the 11 o'clock position will engage forward gear with minimum throttle. From the 11 o'clock position to the 9 o'clock position the vessel is in forward gear with forward throttle selections.

***Pulling*** the throttle back from the neutral 12 o'clock position to the 1 o'clock position will engage reverse gear with minimum throttle. From the 1 o'clock position to the 3 o'clock position the vessel is in reverse gear with reverse throttle selections.

As you shift from neutral to forward or reverse positions, *push up on the neutral release lever* located under the gearshift knob. This will allow the control to shift into the desired gear.

### Neutral Safety Switch

The remote control features a neutral safety switch which ensures the stern drive and control are in the detented neutral position for starting the engine.

You will hear a distinct sound and will "feel" the remote control in the detended neutral position. If you turn the key to the "start" position and the engine starter doesn't crank over the engine make sure the remote control is in the detented neutral position.

Remember these points when shifting :

1. Do not shift quickly from forward to reverse gear postitions. Drive system damage may occur.

2. Do not "pump" the throttle in neutral or flooding will result. The same thing will happen if you keep pumping the automobile accelerator pedal. Today's engines use an enrichment valve system that requires very little starting throttle.

3. Do not try to shift into forward or revese gear at high rpm's. Personal injury, drive system or property damage may result.

4. Only use idle throttle positions when docking or maneuvering in tight quarters.

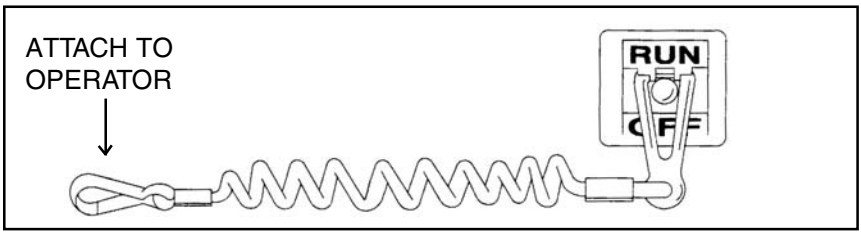
5. Wear your safety lanyard at all times.

6. Never shift the controls with the engine not running. Control, inkage and or stern drive damage may occur.

7. For more information read your engine manufacturer's manual before operating the remote control.

## Safety Lanyard (Interrupt Switch)

The safety lanyard ***(used on selected remote controls)*** is sometimes called an interrupter switch is attached to the operator and the remote control panel (See the illustrations). Should the operator lose control of the vessel and become dislodged from his seat or fall overboard the lanyard will shut the engine off.




Make sure the lanyard is installed to a part of clothing such as a belt or belt loop before operating the vessel. Never disconnect the hook from attached clothing while the engine is running.

**NOTICE**

IF THE INTERRUPT SWITCH IS IN THE "OFF" POSITION
THE ENGINE WILL CRANK OVER
BUT WILL NOT START.

**WARNING**

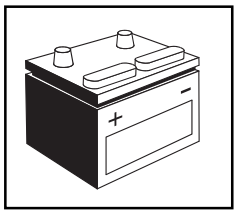
INTERRUPT SWITCH MUST BE ATTACHED TO
OPERATOR WHILE ENGINE IS RUNNING.
QUALIFIED OPERATOR MUST BE IN CONTROL
AT ALL TIMES. READ OWNER'S MANUAL BEFORE USE

# Systems

## ELECTRICAL

There are two types of electrical systems available on most vessels. One is called direct current ( DC for short). Regal boats primarily use 12 volt DC current. It is called DC because in a circuit it flows one way only. Your automobile is a typical example of 12 volt DC current.
Alternating current is used on boats with shore power capacity. It is called alternating current (AC) because it travels in one direction and then in a fraction of a second reverses its flow. Shorepower uses alternating current on selected boats. It is normally 120 volts and 60 cycles per second in the United States. Your home is an example of alternating current. In this manual, we will focus on direct current.

### Direct Current (12 volt DC)




Storage batteries (sometimes called wet- lead cell batteries) furnish 12 volt electricity to boat components. Storage batteries use 2 dissimilar metals immersed in an liquid to carry current (acid). The engines require large reverse amounts of battery power for starting purposes. Check the maintenance chapter for battery information.
The automobile battery is charged up by the engine alternator. The same holds true for the marine battery. The dash volt meter displays the battery voltage. If the volt meter shows below 12 volts there could be a charging system malfunction. This condition needs to be investigated before the batteries become completely drained.

# WIRE COLOR CODES (solid color/stripe)

| Color | Gauge | Function |
|---|---|---|
| Red | 00 | Battery Cable To Engine |
| Black | 16 to 4 | All Grounds |
| Black/White | 16 | Halon Fire Extinguisher |
| Brown | 12 | Water Pressure Pump |
| Brown | 16 | Aft Bilge Pump/Manual |
| Brown | 16 | Fwd. Bilge Pump/Manual |
| Brown/Black | 10 | Overboard Discharge Pump |
| Brown/White | 16 | Aft Auto Bilge Pump |
| Brown/Red | 16 | Fwd. Auto Bilge Pump |
| Brown/Pink | 16 | CO Detector |
| Yellow | 12 | Blower |
| Yellow/Black | 16 | Stereo Memory |
| Orange | 12 | Refrigerator, Hatch Ram |
| Orange | 16 | Windshield Wiper/Run |
| Orange/White | 16 | Windshield Wiper/Park |
| Orange/Black | 16 | Horn |
| Orange | 10 | Spotlight |
| Blue | 14 | Interior Lights |
| Blue/White | 14 | Cockpit Lights |
| Yellow/Red | 14 | Engine Cranking Circuit |

# WIRE COLOR CODES (CON'T.)

| Color | Gauge | Function |
|---|---|---|
| Blue | 10 | Cabin Light Main Feed |
| Blue/White | 16 | Transom Courtesy Lights |
| Gray | 16 | Bow, Navigation Lights |
| Gray/White | 16 | Mast Light (Fwd. Running) |
| Gray/Black | 16 | Mast Light (Anchor Light) |
| Red/Black | 16 | Windlass Up |
| Red/White | 16 | Windlass Down |
| Red | 16 | Gas Vapor Detector, Stereo Remote, Breaker To Dash Feed Leads |
| Red | 2/0 | Main DC Panel Feed |
| Red | 2 | Positive Feed, Starter, Battery |
| Red | 4 | Positive Feed |
| Red | 6 | Positive Feed, Alt. Charge |
| Red | 8 | Positive Feed, Alt. Charge |
| Red | 14 | Positive Feed, Electronics |
| Yellow/Black | 16 | Tank Monitor |
| Purple | 16 | Hour Meter |
| Green | 8 | Bonding |
| Green | 16 | Tank Level Monitor |
| Pink | 16 | Fuel Tank Sender Feed |

The standard wire color, gauge size and function shown is used throughout the marine industry. The charts are helpful in identifying wire circuitry during troubleshooting or the adding of marine accessories. Never replace a wire with a size other than shown in the chart. This practice could result in fire or component failure.

## DC Switches

Following is a summary of direct current switches used on Regal boats. Your boat ***may not*** have some of these switches since electrical components and specifications can change at any time. These switches may be located at the dash, cockpit or part of a DC control panel.

**Blower**

This switch controls the blower in the bilge. The blower must be activated (turned to the "on" position at least 4 minutes prior to starting the engine. The blower should be used below cruising speeds.

**WARNING**

GASOLINE VAPORS CAN EXPLODE. BEFORE STARTING ENGINE, OPERATE BLOWER 4 MINUTES AND CHECK ENGINE COMPARTMENT FOR GASOLINE LEAKS OR VAPORS. RUN BLOWER BELOW CRUSING SPEED.

**Navigation/Anchor**

This switch controls the running and stern lights. It is a two position switch. Activate the top section and the running lights (navigation and stern lights) are activated. Activate the bottom portion and the stern light (360 degree light) is activated. Remember the navigation lights, sometimes called running lights must be used between sunset and

sunrise. Should you anchor or stop the vessel at night the 360 degree light is required to be lit.

**Cockpit Lights**

This switch controls the courtesy lights in the cockpit area. Using these lights is especially useful when boarding or exiting the vessel at night.

**Horn**

This switch controls the audible horn signal. Be sure to test the horn before each outing and learn the horn and bridge signals.

**Bilge Pump**

This switch controls the bilge pump located in the engine compartment. It works manually or automatically. When the switch is manually activated the bilge pump sends the accumulated bilge water overboard. There is a outlet on the aft hull where you can visually monitor the exiting water. When the water stops deactivate the bilge pump switch. In the automatic mode, the swich uses a float switch. When bilge water reaches a predetermined level, the float switch activates the bilge pump.There is a built-in lighted icon on the dash bilge pump switch that lights when the automatic mode is activated. The operator should monitor this icon periodically while operating the vessel. If the light activates stop the vessel and investigate the problem. Check the bilge pump before each outing and remove any foreign objects caught in the float switch or pump grating.

**Fresh Water**

This switch controls the fresh water pump used on selected models. Make sure this switch is turned to the "off" position before deboarding since the pump could be damaged if the system developed a leak, etc.

**Docking Lights**

This switch controls the hull docking lights. They are very useful for night maneuvering and docking.

**Engine Hatch**

This switch controls the engine hatch used on selected models. It supplies power to a hydraulic ram which opens the hatch. Be sure all persons and objects are clear of the engine hatch area and before activating the switch. Keep an "eye" on the engine hatch while it is opening or closing.

**Accessory (Acc)**

This switch controls any after market accessories installed on the boat. Make sure any added equipment is matched to the breaker protecting the circuit.

**Windlass**

This switch controls the optional anchor windlass.

## DC Circuit Protection

As part of the direct current circuitry the engine features a breaker with a reset button. This breaker protects the engine wiring from overloads. Refer to the engine owner's manual for the breaker location and operation.
In addition, there are dash breakers protecting the individual switches. If they "pop" due to an overload, they can be reset by pressing the breaker reset. TheDC breaker sizes are listed. Replace a breaker with the identical capacity only! Where fuses are used replace with the same amperage and type.
Following is a DC breaker and or fuse listing for your boat.

# DC BREAKER & FUSE LISTING

| Function | Breaker/Fuse Size In Amps | Fuse Or Breaker |
|---|---|---|
| Accessory Plug | 10 | Either |
| Water Pressure Pump | 15 | Either |
| Waste Pump | 20 | Either |
| Refrigerator | 10 | Either |
| Cabin Lights | 10 | Either |
| Cockpit Lights | 5 | Either |
| Stereo | 10 | Fuse |
| Stereo Memory | 2 | Fuse |
| CO Monitor | 3<br>1 | Either<br>Fuse |
| Bilge Pump | 3 | Either |
| Blower | 5 | Breaker |
| Horn | 10 | Breaker |
| Ignition | 20 | Breaker |
| Nav/Anchor Lights | 10 | Breaker |

* NOTE: Parts of the above denote optional equipment

## Battery Switch

There are two styles of battery switches used. One type displays on and off positions with a selection knob. With this style switch the operator simply turns the knob to the "off" position when exiting the boat. Make sure the knob is fully detended when selecting the on or off functions. The automatic bilge pump still operates with the battery switch off. The location of this switch varies but normally it is mounted in the aft cockpit engine compartment.

The other style battery switch used displays 4 functions; off, 1, all and 2. They stand for off position, battery l, both batteries and battery 2. This switch is designed to start the engine from either battery if one is low or both batteries. Simply turn the knob to the desired position before cranking over the engine. This switch features "make before break" technology which allows the operator to turn the knob between 1, 2, or all positions with the engine running. It is recommended that you alternate between battery 1 and 2 positions each outing. Both batteries will stay charged this way. If you operate the switch in the all position and a malfunction occurs it is possible to drain both batteries. This battery switch is normally located in a weather protected compartment in the cockpit. See the illustration.

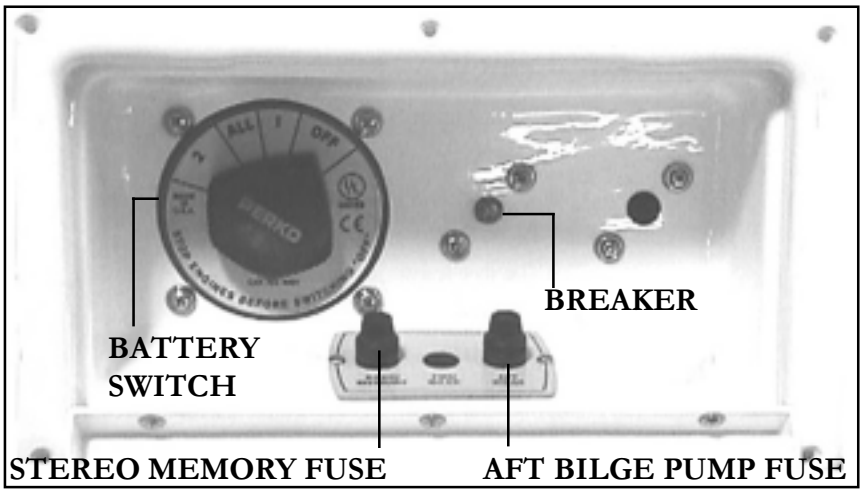
## Battery Switch Box

Inside the battery switch box are several electrical items. One of the items just to the right of the battery switch is a breaker normally 30 amps with a red reset button. This breaker protects the main red power lead running up to the dash.

A stereo memory fuse is located in the small panel at the bottom of the box. Should the batteries be disconnected for a short period of time the stereo memory of selected stations and other functions remains intact.

The aft bilge pump fuse protects the bilge pump normally located in the engine compartment area.

**TYPICAL BATTERY SWITCH BOX**




# NOTICE

AVOID DAMAGE TO THE ALTERNATOR
AND OR CHARGING SYSTEM COMPONENTS.
NEVER TURN THE BATTERY SWITCH TO THE “OFF”
POSITION WITH THE ENGINE RUNNING

# FUEL

The fuel system consists of a fuel tank, fuel fill fittings marked "gas" or "diesel", fuel hoses, fuel vents, anti-siphon valve, fuel filter, fuel gauge and sender. Each one of these components plays an important role in providing an uninterrupted flow of fuel while operating your boat. Refer to the technical drawing section for system specifics.

## Fuel Tank

Your boat uses an aluminum or polyester fuel tank. These tanks are tested several times along with the fuel system components for safety requirements and dependibility in house and inspected independently by National Marine Manufacturers Association personnel.

## Fuel Fills

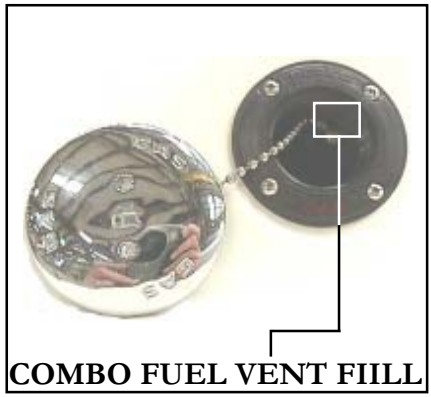
The fuel fills are labeled "gas" or "diesel" and are normally located on the aft deck. When fueling the boat keep the fill nozzle in contact with the fuel fill pipe since it decreases static electricity. Always use the recommended fuel octane rating as specified in your engine owners manual. ***Extinguish all flame producing agents before fueling!*** Read the section regarding fueling in chapter 5.

**WARNING**

USE OF ALCOHOL ENHANCED FUEL, OR ANY FUEL OTHER THAN GASOLINE,
CAN LEAD TO DETERIORATION OF THE FUEL SYSTEM COMPONENTS.
CAN RESULT IN FIRE AND POSSIBLE EXPLOSION

## Fuel Vents

Fuel tanks are vented overboard for the fumes to escape. While the tank is filled, air is displaced by the incoming fuel is relieved through the fuel vent. When the fuel tank is near or full slow down or stop the nozzle flow to keep the fuel from splashing out the vent.
There are two types of fuel vents. One style is located near the fuel fill fitting on the aft deck and is designed to minimize any fuel spillage. The other type of fuel fill used is a combo type. The fuel fill and the vent occupy the same cavity under a protected cover. If fuel overflows through the vent the design forces it back into the fuel fill and tank.




A seasond skipper will hear when the tank is near the top to avoid any overboard spills which could harm the environment.

## Anti-Siphon Valve

The fuel feed line is equipped with an anti-siphon valve at the fuel feed line tank connector. The valve is pulled off its seat by fuel pump pressure as the engine is cranking or running. It forms a one- way fuel roadway. It prevents fuel from siphoning out of the tank in the event of a fuel line rupture or disconneted fuel feed hose. As you can see they are important safety items.

Do not remove the anti-siphon valve or its components from the fuel tank. Clean or replace a clogged or stuck anti-siphon valve. Contact your closest Regal dealer or marine professional for more information

## Fuel Gauge & Sender

The dash fuel gauge is only an indication of the on board fuel supply. They are not exact reading instruments. Therefore, use the one third rule discussed earlier for monitoring your fuel supply. *There are not many filling stations on the open waterways!*
The gas sender located in the fuel tank uses a float system which sends a signal to the dash fuel gauge as to the fuel tank level.

## Fuel Filters

Fuel filters are installed on marine engines. They are of the spin on type similar to your cars oil filter. Their main purpose is to trap dirt particles and water in fuel. It is a good idea to keep an extra fuel filter on board along with a filter wrench, pan and clean rags for emergencies. Dispose of all fuel residued materials in an environmentally safe fashion.Consult your engine owner's manual for more information.

## Diesel Fuel System

Diesel boats use special fuel filters. Most of these filters have a thumb screw to drain settled particles via the bottom of the filter. Refer to the engine manufacturers owners manual for further information.

**CAUTION**

ALGAE CAN GROW IN DIESEL FUEL
PERIODICALLY ADD A CONDITIONER
TO THE DIESEL FUEL SYSTEM

# WATER

## Water System Description

Selected models are equipped with a fresh water supply system. It consists of a water tank, fill and vent, sink, and a hand pump or a faucet supplied by a water pressure switch.

One type of fresh water system uses a water tank with a dockside water fill. There is a hand pump on the faucet that supplies water when primed.

The other type is called the *pressure water* system. It uses the same deck water fill and relies on a 12 volt pump located between the water tank and the faucet to supply water. To activate the system there is a dash switch marked "water pressure". When activated the switch sends power to the pressure pump which supplies fresh water.

When the water supply line is full a pressure valve switch releases.

DECK WATER FILL

We recommend turning the dash pressure switch "off" when the vessel is left for extended periods. For initial filling of the water system and winterizing, refer to the operation and maintenance sections.

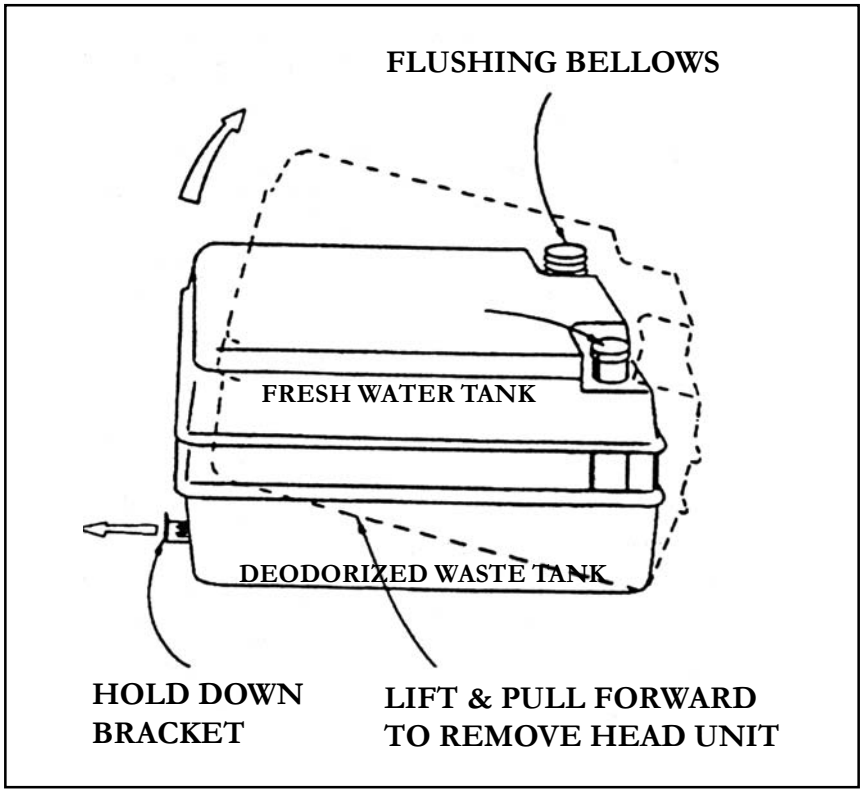
# WASTE

## Waste System Description

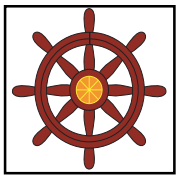
The waste system normally consists of a self-contained sanitation device known as a chemical toilet. It features an upper fresh water tank and a lower deodorized tank. These two components can be separated for waste disposal, cleaning and refilling. The lower tank contains a capacity

gauge. Before each outing, check the waste level since it is illegal to dump waste within and extending out 3 miles from United States territorial waters. Be sure to use the proper chemicals and paper in the unit that are biodegradable and environmentally friendly.
Chemical toilet supplies are available at most marine oultle stores and marinas. Some chemical heads feature an optional waste fitting that permits a pump out station hook-up for removing waste. This procedure saves manually dumping the tank. The optional pump out fitting is located on the side of the deck and is labeled "waste". Refer to the owner's information pouch and this manual for additional information.

## TYPICAL CHEMICAL TOILET



# Vessel Operation



This chapter explores the many faucets of running your vessel from casting off to docking and handling emergencies. We cover the basics but suggest you read other information on the chapter topics. Also, become familiar with your engine owner's manual since many of the items discussed are found there in more detail.

## GETTING UNDERWAY

### Pre-Departure Questionnaire

- Have all fluid levels been topped off?
- Is the fuel tank full?
- Is all safety equipment accounted for and easily accessible?
- Are navigation lights and horn in good working condition?
- Is the bilge free of water and does the bilge pump operate?
- Is the engine, outdrive, and propeller in good working condition?
- Is the drain plug in place (Dry stored vessels)?
- Have all passengers been briefed on emergency procedures and seated for departure? Is the boat load balanced?

- Is the operator sober, alert and ready to skipper the vessel?
- Have all passengers been fitted for life jackets?
- Has a float plan been filed and left with a component person?
- Has the bilge been sniffed and the fuel system leak checked?
- Are the seacocks open (if applicable)?
- Is all communication equipment in good operating condition?
- Has a second person been briefed on operational procedures should the skipper become disabled?
- Are all gauges and electrical switches functioning properly?
- Has weather information been gathered and analyzed?

## Underway Questionaire

- After casting off have all dock lines and fenders been stowed?
- Are all passengers seated and all transom doors closed?
- As skipper are you monitoring the dash gauges for changes?
- As skipper are you on the lookout for changing weather?
- As skipper are you checking for abnormal vibration or steering?
- Is the remote control safety lanyard (if equipped) tightly secured to your belt or clothing?

### Disembarking Questionaire

- Have you removed the keys from the ignition and secured them?
- Have all systems been checked for leaks?
- Has the battery switch been turned to the "off" position?
- Are all hatches and portholes secured and seacocks closed?
- Has the fuel tank been filled enough to prevent condensation?
- Is the vessel properly tied and covered with equipment stored?

## FUELING

**DANGER**

AVOID PERSONAL INJURY OR DEATH!
GASOLINE IS A HIGHLY FLAMMABLE
AND EXPLOSIVE MATERIAL.
PRACTICE "NO SMOKING" AND EXTINGUISH ALL
FLAMMABLE MATERIALS WITHIN 75 FEET
OF THE FUEL DOCK.

**WARNING**

AVOID SERIOUS INJURY OR DEATH
FROM EXPLOSION OR FIRE
RESULTING FROM LEAKING FUEL.
INSPECT ENTIRE FUEL SYSTEM
AT LEAST ONCE A YEAR.

## CAUTION

SINCE GASOLINE IS AVAILABLE IN VARIOUS OCTANE LEVELS, REFER TO THE ENGINE MANUFACTURER'S OWNER'S MANUAL FOR THE CORRECT ONE FOR YOUR ENGINE. USING IMPROPER OCTANE FUEL CAN CAUSE ENGINE DAMAGE AND VOID THE WARRANTY.

## Before Fueling

- ☑ Make sure a working fire extinguisher is at close hand.
- ☑ Stop engines and any device that can cause a spark.
- ☑ Disembark all passengers and crew not needed for fueling.
- ☑ Fuel if possible during the daylight hours.
- ☑ Check to ensure nobody is smoking in the boat or near the fueling dock.
- ☑ Close all portholes, hatches and doors to keep vapors from blowing aboard and settling in the bilge.
- ☑ Tie up your boat securely at the fuel dock.
- ☑ Identify the fuel fill. Unfortunately, people have mistakenly filled the water or waste with fuel.
- ☑ Visually inspect all fuel system components before each filling.
- ☑ Avoid using fuels with alcohol additives. They can attack fuel system hoses and cause deterioration.

## During Fueling

☑ Keep the fuel nozzle in contact with the fuel fill to guard against static sparks. The fuel fill pipe is grounded through the fuel system wiring to protect against static electricity.

☑ Avoid overfilling the fuel tank. Leave room for expansion. Also, if fuel exits the fuel vent indicating the tank is full, this situation is dangerous and unfriendly to the environment.

☑ Avoid spilling any fuel. Clean up any fuel accidently spilled with a clean rag and dispose of it onshore.

## After Fueling

☑ Close all fuel fill openings tightly. Use a fuel key if needed.

☑ Open all portholes, hatches and doors.

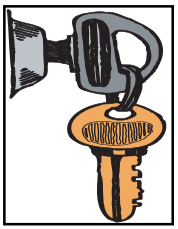
☑ Energize the blower for a minimum of 4 minutes

☑ Sniff in the lower bilge and engine compartment for gas fumes. If fumes are detected continue to ventilate until the odor is gone. Look for any traces of fuel droplets or spillage. ***Do not start the engines, smoke or run any electrical components until the fumes can no longer be detected.***

**WARNING**

AVOID SERIOUS INJURY OR DEATH!
THE OPERATOR OF THE CRAFT MUST HAVE COMPLETE CONTROL OF THE HELM STEERING STATION WHILE THE VESSEL IS MOVING.
NEVER LEAVE THE HELM STATION UNATTENDED WHILE THE VESSEL IS MOVING.

# STARTING & STOPPING



The following general information covers starting and stopping your engine. Read and understand all previous information on remote controls, fueling and operational procedures. Pay particular attention to all labels. Refer to the engine owner's manual for in depth propulsion system information.

## Starting Guidelines

Review all pre-departure information. Before starting your engine make sure all canvas is removed and stored. Start engine only in a well ventilated location to avoid CO build-up. Turn the battery switch to the number 1 or 2 battery position.

Position the remote control handle in the neutral position. Advance the neutral throttle advance position as instructed in the engine owner's manual. Connect the safety lanyard to a belt or secure to clothing such as a pants belt loop. Keep passengers seated and away from controls.

**DANGER**

AVOID PERSONAL INJURY OR DEATH!
WHEN ENGINE IS RUNNING TRANSOM DOOR MUST BE CLOSED AND LOCKED. SWIM PLATFORM AND LADDER MUST NOT BE IN USE.

**WARNING**

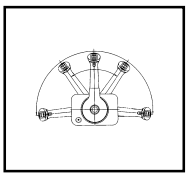
GASOLINE VAPORS CAN EXPLODE. BEFORE STARTING ENGINE, OPERATE BLOWER 4 MINUTES AND CHECK ENGINE COMPARTMENT FOR GASOLINE LEAKS OR VAPORS. RUN BLOWER BELOW CRUSING SPEED.

Turn the ignition key to the momentarly start position. You will hear the starter cranking over the engine. When the engine starts release the key switch. It will automatically align itself in the run position (ignition). If the engine does not start, refrain from cranking the engine over 10-12 seconds. Allow the starter and battery a chance to recover. Advance the remote control in the neutral throttle position as recommended in the engine manual. Do not race the remote control in the neutral position.

**CAUTION**

TO AVOID ENGINE DAMAGE!
CHECK THE OIL GAUGE IMMEDIATELY AFTER STARTING. IF LOW OR NO READING SHUT DOWN ENGINE IMMEDIATELY AND INVESTIGATE THE PROBLEM.

## Shifting Guidelines



Before shifting into reverse or forward make sure the coast is clear. When shifting to either gear from neutral make sure the throttle is in the idle position. Do not pause but engage the shifter quickly into the desired gear. Allow your vessel to lose all headway before shifting into reverse or forward gear. Practice shifting! You will become more familiar with the procedure and self-confidence will build especially in tight docking situations. Most importantly, stay alert!

## Stopping

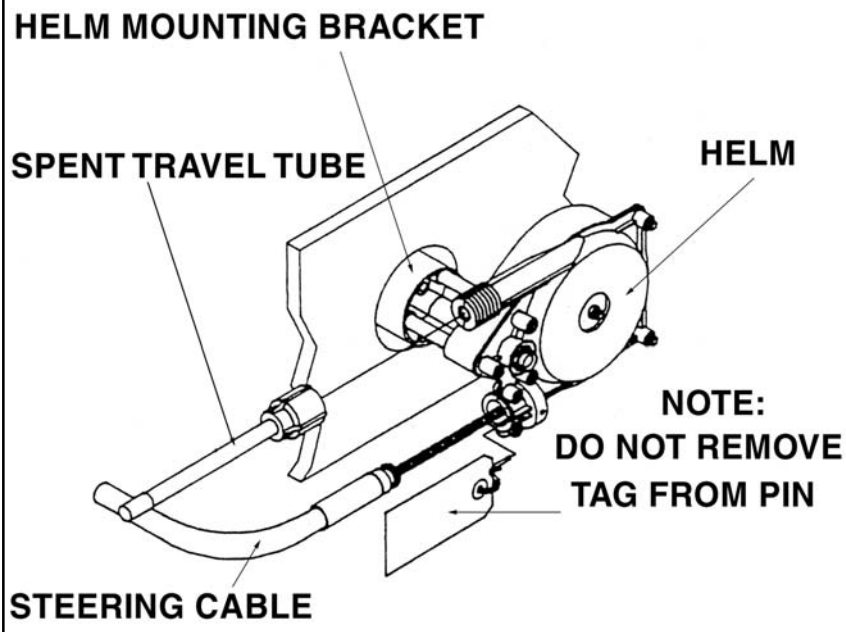
Before stopping the engine make sure it is in neutral and idle speed. After an outing let the engine cool down at idle speeds for a few minutes before turning the ignition off. Glance at the gauges one last time to monitor their readings. Do not pull on the safety lanyard verses the ignition switch to stop the engine. Never turn off the engine while in forward or reverse gear since water could enter the engine through the exhaust system and cause extensive damage. The same holds true for running the boat in reverse. Above all, use common sense.

# STEERING

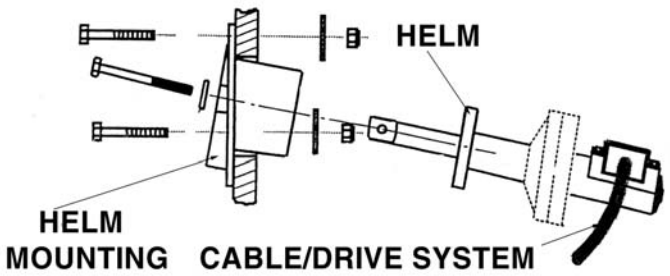
Your Regal uses a rotary or rack style steering system. These systems transfer helm mechanical motion to the engine. There is a hydraulic steering cylinder which with the assistance of a steering pump sends fluid force to the stern drive steering arm changing the course of the boat, depending on the direction the steering wheel is turned.
Since the steering system is the primary link for engine control, it must be periodically inspected and maintained. The hardware at both the helm and engine must be checked regularly for tightness.
Check the steering system for full steering port and starboard before disembarking. Refer to the steering manufacturer's literature in the owner's pouch and the maintenance chapter for more information.

**WARNING**

AVOID PERSONAL INJURY AND PROPERTY DAMAGE!
LOOSENING OR LOSS OF ONE OR MORE FASTENERS
MAY CAUSE FAILURE OF THE STEERING SYSTEM
OR DAMAGE TO THE STEERING CABLE,
RESULTING IN LOSS OF STEERING CONTROL.
PERIODICALLY INSPECT THE STEERING SYSTEM.




**SAFE-T HELM STEERING SYSTEM**




**RACK STEERING SYSTEM**

# FENDERS

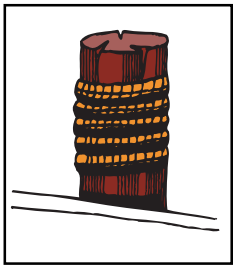
## Fender Usage

Fenders are normally made of a rubberized plastic and are usually filled with air. Most have a fitting like a basketball so they can be inflated or deflated. Fenders are available in a wide range of sizes and shapes to fit both small and large vessels. Fenders are normally designated in inches. They are used between piers, docks, sea walls and the boat. They protect the topsides of the boat from rubbing against rough objects. Most fenders have eyes of attachment which allow a line to be inserted vertically or horizontally. This will permit the fender to be tied off to fit a variety of marina, dock and tidal situations. Be sure the fender is correct for the vessel size. It is a good idea to carry extra fenders but half a dozen is normally an acceptable number. Remember to store fenders on board so they can be easily accessed. Some people incorrectly call fenders "bumpers".

## Fender Types

There is a variety of fender styles and types, each selected for specified uses. When choosing fenders, contact a marine dealer or supply house. Explain how you moor and use your vessel so they can recommend the best fender type for you. We suggest the type with a fill plug so you can inflate them with a hand pump like the ones used for bicycles.

# DOCK LINE BASICS



Most skippers use dock line terminology fairly loose but there is more to the basics than just bow or stern lines. There are several lines that can be secured to the bow and stern and depending on their direction and use, can be called other names. Remember that "forward" and "aft" refer to the direction that a spring line runs from the vessel, and not where it is secured on board.

## Bow & Stern Lines

There is only one true bow line. It is secured to the forward cleat and run forward along the dock to prevent the vessel from moving to the stern. The stern line leads from a rear cleat to a piling or cleat on the dock astern of the vessel. This line keeps the boat from moving ahead. For small vessels these are the only lines needed for normal wind and current conditions. If located in a tidal environment, keep slack in the lines.

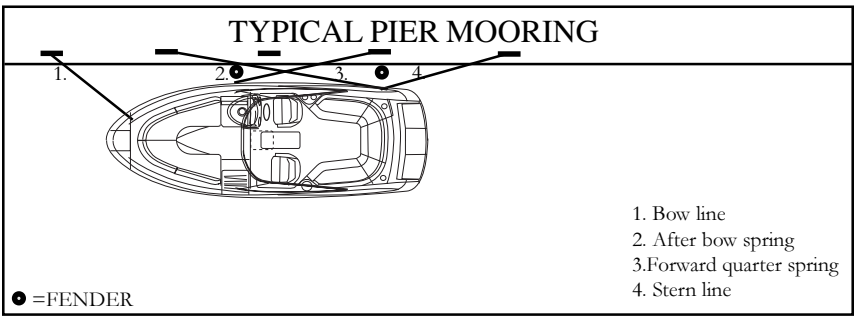
## Breast Lines

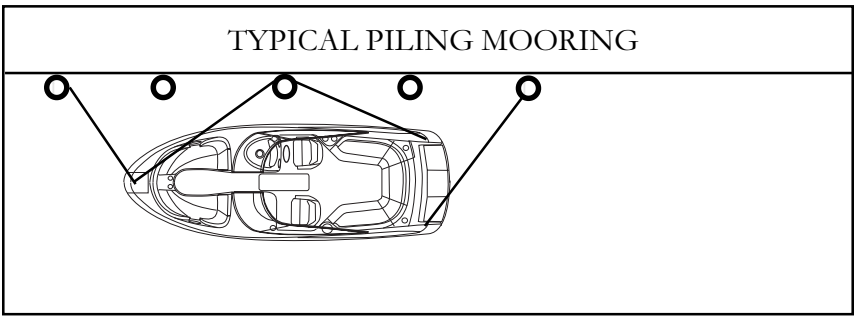
These lines are attached to the bow and stern that lead to nearly right angles from the center of the vessel to the dock. They help keep larger vessels from moving away from the dock, or are pulled in to help people board the vessel. Bigger vessels may use bow or quarter breast lines.

## Spring Lines

Most small boats use two spring lines although it is possible to have four. They are called the after bow spring and forward quarter spring.

Bow springs are secured at the vessels' bow area. Forward spring lines lead forward from the boat to the dock and control movement sternward. After springs stem aft from the vessel, and stop movement ahead. Spring lines are used to prevent movement in a berth, ahead or astern. They are really useful in controlling the effects of a real active tidal surge. Spring lines are useful where fenders need to be kept in place against piles.




## Boat Mooring

Most boats can be secured to a dock using four lines.The after bow spring is crossed with the forward quarter spring and secured to individual dock cleats or pilings. This ensures longer springs and can be snugged up tighter for more efficient tidal control. Remember, if you only have one piling available, position the vessel so this point is opposite admidships. Run both spring lines to it. These lines will be shorter but still useful.

The bow and stern lines should be relatively at a 45 degree angle with the dock. The stern line can be attached to the near-shore quarter cleat, but will work more efficiently to the offshore quarter cleat. The longer line will allow the boat flow with the tide with less time checking the vessel.

## Dock Line Sizing

Most dock lines today are made of nylon, either of twisted rope or braided core and cover. The most often used material is nylon because of its stretching abilities absorbing shock loads. It is chafe resistant for extended life and is easier on bare hands.
The line's size varies with the vessel. Normally, a vessel in the 20' to 40' boats will use 1/2" diameter nylon lines. Larger yachts use 5/8" and 3/4" diameter nylon lines. Smaller boats can use 3/8" nylon lines. Dock lines need to have the strength to hold the vessel and have enough density to resist chafing. They shouldn't be too heavy that they lose their shock-absorbing capabilities. Use the right size line for the vessel since a line to large for the boat will pull hard against the vessel since it won't be forced to stretch. If the line is too small for the vessel, there is no margin for wear and chafe when under strain

## Securing Lines

When mooring your boat, make sure the dock lines are secured at both ends. Depending on your situation you may need to loop the eye splice of the dock line around a piling. Sometimes the mooring line will lead down sharply from the piling to the deck cleat. Loop the eye splice around the piling twice to keep it from being pulled up off the pile. Pull the line through the looped eye if the mooring line is too small to go around the piling twice or too small to fit over once.
If you must drop a line over a piling that already holds another boat's line, run the eye of the line up through the first eye from below, then loop it over the pile. This will allow either line to be removed without

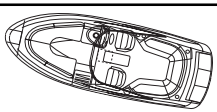
disturbing the other. If another line is dropped over yours, simply reverse the process. Secure a little slack in the other dock line, then slip your eye up through its loop and over the top of the pile. Your line can be dropped through the other eye.

When debarking from a dock, it is easier to release the line from a cleat or piling, from on board the boat, as soon as you leave the dock. Loop a long line around the cleat or pier and leading both ends on board you can release the line easily. Slip one end around the cleat or pile, the pull it back on board. Release the line without the eye splice, so it will run freely from around the pile without hanging up on the splice.

# STEPS TO STERN DRIVE DOCKING

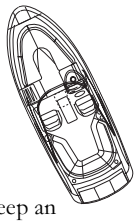
Inboard/Outboard powered boats are fairly easy to back up and maneuver with a little knowledge and docking practice. One of the most important aspects of the process is to keep your calm in the wake of a busy marina. Basically, the reversing propeller is turned in the direction you want to go by using the wheel.

Some boats tend to be influenced by the wind. When backing down in a crosswind, allow room to maneuver and watch the bow. Try not to overreact or get excited, but use your knowledge and experience. If the wind begins to swing the bow, you need to stop backing, turn the wheel to port and go forward to straighten the boat. Use a quick burst of power but not too much to knock your crew off balance.



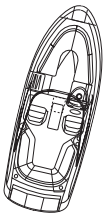
A. Stop the boat by shifting in reverse. Put the wheel over to the port and begin backing in. Slow down your speed by momentarily shifting into reverse.

**** Control in reverse idle position, Outdrive to port.***



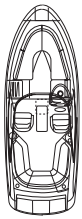
B. Continue backing up the boat with the wheel hard to port. Keep an eye on the bow, and begin to straighten the wheel as the boat enters the slip.

**** Control in reverse idle position, Outdrive to port.***



C. Center the wheel to align the boat parallel with the dock. If the stern is too far from the dock, shift to neutral, then put the wheel hard over to port and then go forward a second or two.

**** Control in neutral idle position. Drive centered.***



D. When the boat is completely into the dock, stop stern movement by shifting into forward. Put the wheel to port to kick the stern over close to the dock if necessary. Shift into neutral and tie up the boat.

**** Control in forward idle position. Drive to port.***

# STERN DRIVE MANEUVERING

Inboard/outboard, I/O or sometimes called stern drive boats do not have rudders. The boat uses a steering system that directs the propeller thrust, by turning the stern drive unit where the propeller is mounted. Normally maneuvering the I/O boat is easier than a similar single screw vessel.

Directing propeller energy (thrust) makes slower speed maneuvering easier. The propeller discharge current is turned from one side to the other which results in turning forces. Rudder boats need water to flow by the rudder to be efficient. Stern drive units are designed to have reduced shaft angle, so the propeller does not produce as much unequal blade thrust and resistance as does a propeller on a single screw boat. Large horsepower stern drive boats do produce more thrust and steering torque but Regal boats have the advantage of power steering. Below is some basic information on how single stern drive boats handle in normal conditions.

## Gathering Headway

When a stern drive is not moving forward or reverse in the water and the propeller is not turning, (shift in neutral) the boat will not react to the helm steering wheel.

As soon as the vessel is shifted into forward gear the propellers action creates a discharge motion and generates energy in the form of thrust. If the stern drive is centered, the discharge motion is directed straight back causing the vessel to advance forward.

You may notice that if you advance the throttle quickly in initial take-off (make sure you have a firm grip on the wheel), the boat has a tendency to pull the stern of the vessel to starboard. There is a trim tab (also serves as a sacrificial anode) located on the vertical drive housing just to the top of the propeller blade. This trim tab helps compensate for the low speed steering torque. Once the boat increases headway and the propeller is operating in a faster water flow this torque

effect decreases.
Sometimes the trim tab may need adjustment on stern drive models. Contact your Regal dealer for further information or consult your engine manufacturer's handbook.

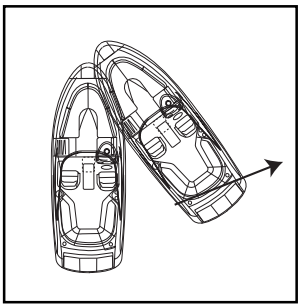
## Turning

Once the boat has gathered headway, with the boat planing at the correct bow angle and the stern drive unit and helm straight the boat tends to stay on a uniform course heading. To assure the boat trim angle is correct use the trim gauge as a guide while activating the trim button on the remote control panel.
When the helm wheel is turned to the right or starboard, the stern drive unit is turned in the same direction. The propeller's discharge force is directed to starboard forcing the boats stern to port. Water flowing past the hull strikes the stern drive gear housing in its starboard side, creating additional turning torque. The stern starts a move to port, forcing the bow to starboard.
If the helm is turned to the left or port the stern drive turns to port, the stern of the boat goes starboard as the bow turns to port.
As the vessel operator gains experience, he will better gauge each maneuver and speed situation. In this way he will understand the handling characteristics of his boat. He needs to keep the safety of his passengers in the highest priority.

## Backing Down

Inboard/Outboard (I/O) boats do not have rudders. The boat uses a steering system that directs the propeller thrust, by turning the stern drive unit where the propeller is mounted. Normally maneuvering the I/O boat is easier than a similar single screw vessel.
If your boat has the steering wheel and stern drive straight with the control in reverse, the stern will be pushed a bit to port by the reversing propeller thrust. This tendency to back to port can be eliminated by turning the stern drive to starboard.

When the vessel begins to gather speed to stern, the water passing by the lower gearcase housing will continue to increase steering torque. If the helm wheel is turned to starboard, and will direct the propeller thrust to port, tracking the stern to starboard.
Wind and current will affect how a vessel backs. Stern drive boats tend to be light displacements and when backing down in a strong crosswind, the bow will tend to fall toward the windward. This may cause steering problems.
Once increased headway is gathered in reverse gear, the force of the lower hull moving through the water is enough to track straight. When backing, the stern will lead as it heads to port or starboard, before the vessel actually starts to turn.

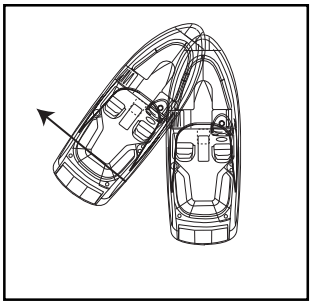


When the control is put in forward gear position, the stern is pushed to starboard; the amount of push depends on the hull design and the amount of throttle advance. See illustration.

## Stopping

Remember that your boat does not have any brakes. It uses reverse thrust from the propeller to stop. If the vessel has headway, with the helm and propeller in reverse. The propeller thrust is directed backwards, past the lower gearcase of the stern drive.
Depending on how far the throttle is advanced, the discharged thrust may not be strong enough to reverse the water flowing by the gearcase. As the power is increased, the propeller thrust becomes strong enough to stop the flow of water past the lower unit, and, as the throttle is advanced it reverses its flow more completely.
When water is flowing past the gearcase, steering torque is increased, but when the thrust stops the water flow, the boat will not respond to the helm. This is a short lived event and is overcome quickly when the water again flows past the gearcase. Furthermore, added to the energy

of the water hitting the lower gearcase, the propeller thrust is directed by turning the stern drive, whic can add to the steering torque.



The prop tends to throw the stern to port. This is why experienced skippers undertake a portside landing when wind and current conditions permit. They allow the prop to move the stern to port toward the dock.

With a forward motion when the helm wheel is turned hard to one side, the vessel pivots around a point about 1/3 its length abaft to stern. See illustration.

# TRIM ANGLE

Stern drive boats have the ability to angle in or out their drve unit in relationship to the transom. This is accomplished by hydraulic shocks located on the outdrve along with an electrical sender unit that reads the drive angle and sends information to the dash trim gauge that shows a reading.

## Purpose Of Power Trim

The purpose of the power trim/tilt is to enable the operator to change the angle of the drive while at the helm. Changing the angle of the drive or "trimming" provides the following benefits:

1. Improves acceleration onto a plane.
2. Maintains boat on plane at reduced throttle settings.
3. Increases fuel economy.
4. Provides smoother ride in choppy water.
5. Increases top speed.

In short, it is a way of fine-tuning the ride of your boat and will enable you to get the most efficient and comfortable ride possible, whatever the conditions.

## Use Of Power Trim

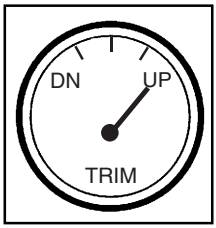
The power trim is normally used prior to accelerating onto a plane, after reaching the desired RPM or boat speed and when there is a change in water or boating conditions. Position passengers and equipment in the boat so that the weight is balanced correctly fore and aft as well as side to side. Trimming will not compensate for an imbalanced load.

To operate the trim, push the switch until the desired bow position is reached. The trim may be operated at any boat speed or at rest. Avoid operating the trim system when running in reverse. Observe the trim/tilt gauge which indicates the boat's bow position achieved by the trim angle of the vertical drive unit. "Bow-Up" corresponds to the upper portion of the trim range on the gauge while "Bow Down" corresponds to the lower portion of the trim range on the gauge.

To determine the proper trim angle, experiment a little until you are familiar with the changes in your boat. The vessel will be properly trimmed when the trim angle profides the best boat performance for the particular operating conditions. A trim position that provides a balanced steering load is desirable.

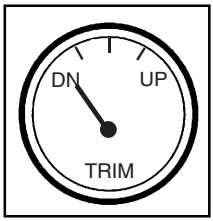
To familiarize yourself with the power trim, make test runs at slower speeds and at various trim positions to see the effect of trimming. Note the time it takes for the boat to plane. Watch the tachometer and speedometer readings as well as the ride action of the boat.

## Operation In "Bow Up" Position



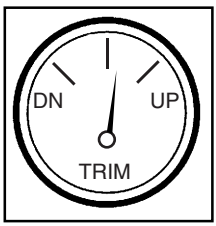

The "bow up" or out position is normally used for crusing, running with a choppy wave condition, or running at full speed. Excessive "bow up" trim will cause propeller ventilation resulting in propeller slippage. Use caution when operating in rough water or crossing another boat's wake. Excessive "bow up" trim may result in the boat's bow rising rapidly, creating a hazardous condition.

## Operation In "Bow Down" Position




The "Bow Down" or in position is normally used for acceleration onto a plane, operating at slow planning speeds, and running against a choppy wave condition. It is also used when pulling water skiers, tubers, kneeboarders, etc. In this position the boat"s bow will want to go deeper into the water. If the boat is operated at high speed and/or against high waves, the bow of the boat will plow into the water.

## Operation In "Level" Position

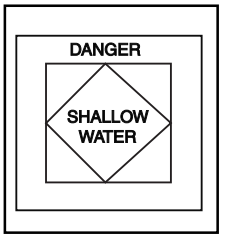



In normal running conditions, distribute passengers and gear so boat is level. At or below crusing speeds, trim the vessel for optimum performance. The trim gauge will show somewhere in the center of the gauge. This position will also enhance running visibility and overall stability. Again, each outing provides different wave, load and running conditions. Be prepared to make trim changes as needed.

**CAUTION**

THE BOAT TRIM SHOULD BE ADJUSTED TO PROVIDE BALANCED STEERING AS SOON AS POSSIBLE EACH TIME YOU GET UNDERWAY. SOME BOAT/ENGINE/ PROPELLER COMBINATIONS MAY CREATE BOAT INSTABILITY AND/ OR HIGH STEERING TORQUE WHEN OPERATED AT OR NEAR THE LIMITS OF THE "BOW UP" OR "BOW DOWN" POSITIONS. BOAT STABILITY AND STEERING TORQUE CAN ALSO VARY DUE TO CHANGING WATER CONDITIONS. IF YOU EXPERIENCE BOAT INSTABILITY AND/OR HIGH STEERING TORQUE, SEE YOUR AUTHORIZED REGAL DEALER

## Shallow Water Operation

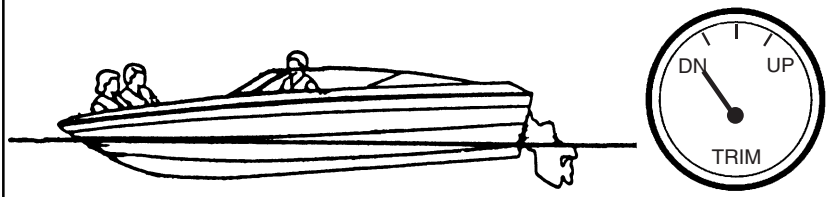



Operating your vessel in shallow water presents various hazards. You are more apt to hit a submerged object such as a rock, sand bar, stump coral, or other unmarked objects.

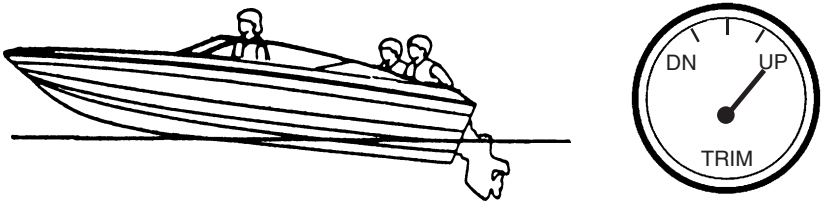
Pay close attention to your charts for descriptions of any shallow areas along with marked submerged objects. Always post a lookout when operating in shallow water. Trim your outdrive up as needed to provide adequate draft. Set the alarm on your depth sounder and travel at a speed that keeps the boat level in these shallow areas.

***If your boat strikes a submerged object stop immediately and check for hull, outdrive and propeller damage.***

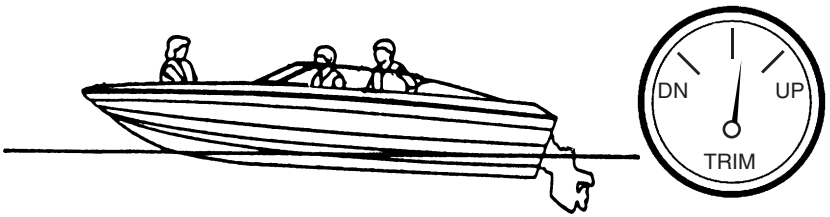
**TRIMMED "TO FAR IN" POSITION**




**TRIMMED "TOO FAR OUT" POSITION**




**WELL TRIMMED "LEVEL" POSITION**




# CAUTION

DO NOT RUN ENGINE ABOVE 1000 RPM
WITH THE STERN DRIVE TRIMMED FOR SHALLOW
WATER MANUVERING SINCE THE STERN DRIVE IS
OUT BEYOND THE GIMBAL RING
SIDE SUPPORT BRACKETS.
OPERATING IN ABOVE MANNER COULD PRODUCE A
DANGEROUS STEERING CONDITION OR COULD
DAMAGE THE STERN DRIVE COMPONENTS.

# ANCHORING

Selecting the correct anchor is an important decision. The anchor style in part depends on the usage and boat type. Regal boats designate an anchor type and or model. Some models incorporate chain, line with an optional windlass. Contact an authorized Regal dealer for more information.

Anchoring is easier with another person on board. First be certain that the line for the anchor is properly attached, to avoid losing the anchor and anchor line overboard.

For most anchors to perform more efficiently, you should attach 3 to 6 feet of chain. The chain will stand up to the abrasion of sand, rock, or mud on the bottom much better than a nylon line. It should be galvanized to reduce corrosion. Next, attach a length of nylon line to the other end of the chain.

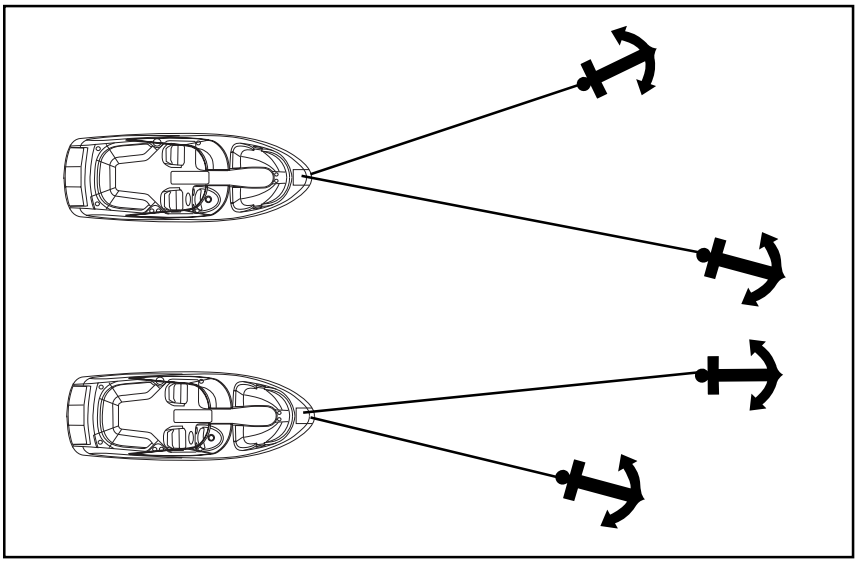
The nylon will stretch under a heavy strain cushioning the impact of waves or wind on both the boat and the anchor.

To anchor, select a well protected area, preferably with a flat bottom. Contrary to modern belief, you do not throw the anchor over while the boat is making headway, or moving forward. In fact, the bow of the boat should be bought slowly backward, while easing the anchor slowly over the side of the boat until it hits the bottom. To "snub the line" means to stop its outward "pay" or movement. Usually the length of anchor line used should be 5 to 10 times the depth of the water.

After you have anchored, check your position with landmarks if possible. You need to continue to monitor these landmarks to make sure you are not drifting. Since anchoring can also be an emergency procedure, the anchor and line should be readily accessible.

For increased holding power in windy conditions, two anchors are sometimes set. If your primary anchor drags, you can run out your secondary anchor without picking up the primary one. The important thing is to lay them out at an angle. When setting two anchors, make sure they are fastened to separate rodes or cleats. This is done in case

you need to adjust one later so the line is accessible.
If two anchors are used ahead of a boat, make sure to set the rodes at an angle than in a straight line to reduce the chances of tangeling as the boat moves in wind and current. See the above illustration.



# TOWING

In case you find yourself aground or in need of a tow, or should you want to tow another vessel, keep in mind that you ***never use deck hardware or cleats to secure lines for towing!***
Deck hardware is intended for mooring and anchoring, and is not designed to withstand the strain and pull of towing. Rather than tie the line to your cleats on deck, it is suggested that you tie a bridle by passing a line completely around the hull of your boat to avoid structural damage.
When towing, always stand clear of a taut line, as any type of line breaking under stress can be extremely dangerous. The perferred line for towing is double-braided nylon, as it has sufficient elasticity to cushion shock loads. Move slowly and cautiously.

# ADMIRALTY LAW

The Admiralty law sometimes referred to as the salvage law was founded primarily on English law fundamentals and basically says that a vessel distressed, in danger of flounder, if rendered assistance from a towing company or private agency, can be forced to relinquish a portion of the vessels' worth for the assistance received.

## NOTICE

IN THE EVENT YOUR VESSEL IS IN DISTRESS, PRIOR TO ALLOWING ANY TOWING COMPANY OR PRIVATE AGENCY THE RIGHT TO PASS A LINE TO YOUR VESSEL, BE SURE TO ESTABLISH THAT YOU DO NOT AGREE TO ANY SALVAGE RIGHTS. ESTABLISH WITH THE CAPTAIN OR OPERATOR THAT YOU WISH TO BE ASSISTED IN A CONTRACT BASIS AND ESTABLISH A PRICE.
OF COURSE IN CERTAIN SITUATIONS, YOU MAY NOT HAVE THIS OPTION.

USE YOUR BEST JUDGEMENT!

**DANGER**

AVOID DEATH OR SERIOUS BODILY INJURY!
DO NOT USE DECK HARDWARE INCLUDING CLEATS FOR TOWING.

## Knots

Knots are useful in docking, towing and other emergency situations. Learning to tie knots requires practice. As they say " Practice makes perfect". Some of the knots used in boating are the square, bowline, anchor bend, clove hitch, figure eight and half hitch. There are several periodicals available that explain various knots and how to tie them effectively. An experienced skipper will know the basic nautical knots and will use them when on the water. Take the time to know the basic knots.

**Figure 8 Knot Tied To Cleat**

A useful knot to learn for general docking is the figure eight with one end reversed. By turning the free end of the line back under, the knot can be released without disturbing the boat. After abit of practice one person can secure a vessel easily to a dock or pier in a variety of weather conditions. This knot normally is used to tie the bow and stern. Then the vessel can further be fastened by tying the spring lines(s) in the figure eight knot. Wrap it around the cleat 2 or 3 times.

# EMERGENCIES

Always be ready to help others on the water if possible, but do not take any unnecessary risks. Use equipment to save a life, but do not risk a life to save equipment. Consult earlier information in this manual concerning accidents, etc. Also, read other literature concerning on the water emergencies. Be alert and prepared!

## Fire

Fire aboard a vessel can spread quickly and can cause tremendous alarm among everyone. Most fires can be prevented by keeping the bilge free from oil and debris. Keep all equipment stowed and maintained in working order. Carry a backup fire extinguisher onboard. If something becomes a possible fire hazard, remove that possibility at once.
Never use water on gasoline, oil or electrical fires. When you dump water on an electrical fire a you can be shocked since water conducts electricity.
Follow these instructions if a fire breaks out:

- Fit everyone aboard with a life jacket. Turn off the ignition.
- Try to keep the fire downwind. If the fire is to the stern, head the bow toward the wind. If forward, put the stern to the wind.
- If the engine should catch fire, shut off the fuel supply Usually there is a fuel tank access that you can crimp the fuel feed line.
- Use a hand fire extinguisher. Make sure to point it at the base of the flames. Use short bursts and sweep the extinguisher side to side. ***Remember : (4 lb. extinguisher discharges in 20 seconds)***

These actions help prevent the fire from spreading to other parts of the boat. You can extinguish fires quickly if you act swiftly. Have a plan of action in motion in case a fire breaks out.

# FIRST AID

Knowing first aid can save lives. A first aid kit and the ability to use it are important ingredients for the safety of a skippers' passengers, crew and vessel. Having confidence and competence in handling medical emergencies on board is a must for the skipper. Invest your time in a first aid course available at the American Red Cross.

## CPR (Basic Life Support)

If someone is seriously injured have someone call for help while the injured person is being attended.

Check for possible danger signs; loss of breathing, unconsciousness, severe bleeding and heartbeat. If you determine the individual is not breathing or unconscious place the victim on their back on a hard surface and do the following:

1. If unconscious, open the airway. Neck lift, head lift or chin head lift.

2. If not breathing, begin artificial breathing. Pinch the nose. Give 4 quick breaths. If airway is blocked, try back blows, abdominal or chest thrusts and finger probe until airway is open.

3. Check for pulse. begin artificial circulation. Depress sternum 2". 15 compressions rate 80 per minute. 2 quick breaths. Continue uninterrupted until advanced medical support is available.

***Follow up immediately with medical authorities!***

# HYPOTHERMIA

Hypothermia is a condition where the body temperature decreases because the body can't generate enough heat to maintain its normal temperature. It can be serious and usually occurs where victims have been immersed in water (under 68 degrees) for periods of time. If you encounter a possible hypothermia victim call for help on the radio and get the person out of the water.
Symptoms are:

1. Shivering that if condition is advanced may stop.

2. Confusion, clumsiness or slurred speech.

3. Rigid muscles.

4. Semiconscious to unconscious.

## Treat hypothermia by the following:

- ☐ Remove wet clothing.
- ☐ Monitor the victim's pulse and breathing.
- ☐ Rapidly apply heat to the body core by using blankets, naked bodies or warm water.
- ☐ Do not give the person any food or drink.
- ☐ Do not warm the arms and legs. Warming of these extremities can be fatal.

***Follow up immediately with medical authorities!***

# ENVIRONMENTAL AWARENESS

There are numerous vessels operating on our waterways on a daily basis. Each boat has as impact on our environment. Boat operation habits, marine sanitation, and maintenance all play a role in a delicate battle to keep the ecosystem clean. Each of us has a role in doing our part as a environmentally conscious skipper to conserve our waterways. The National Marine Manufacturer's Asscociation lists their top ten of Eco-Boating Practices as follows:

1. Observe all regulatory agency policies regarding marine toilets.

2. If equipped with a holding tank, use marina pump-out facilities.

3. If used, make sure bottom paints are legal and ecosystem friendly.

4. Use only biodegradable cleaning agents.

5. Dispose of all garbage and liter on shore properly, not on the water.

6. Don't top off fuel tanks. Leave expansion room. Clean up spills.

7. Watch your wake and propeller wash.

8. Make sure your engines are well tuned and maintained.

9. Control your bilge water.

10. When fishing, practice the "catch and release" principle.

Follow these basics practices when on the waterways. Treat the environment in a way that you would like to be treated.

# CALIFORNIA AIR RESOURCE BOARD (CARB) LABEL

Your Regal boat may have a star shaped label affixed to the bow, port hullside. It is located at the front of the state registration numbers. This label is part of the California Air Resource Board (Carb) SD/I rule. If your boat is operated in the state of California and/or bordering waters, this label MUST remain intact. The label shows that the engine installed as original equipment meets a currently approved California state regulatory emission level. See the example below which shows the current California ultra low 3 star label.

**CARB LABEL**

# CALIFORNIA PROP 65

Proposition 65 relates to the state of California and is an additional requirement added to their Safe Drinking & Toxic Enforcement Act of 1986. Prop 65 basically summarized states that:
"No person in the course of doing business shall knowingly discharge or release a chemical known to the state to cause cancer or reproductive toxicity into water or onto land where such chemical passes or probably will pass into any source of drinking water ...." and it goes on to say " no person in the course of doing business shall knowingly and intentionally expose any individual to a chemical known to the state to cause cancer or reproductive toxicity without first giving clear and reasonable warning to such individual ....."
For more information, contact the California Office of Environmental Health Hazard Assessment at 916-445-6900 or http://www.oehha.ca.gov/prop65.html.

## WARNING

A wide variety of components used on this vessel contain or emit chemicals known to the State of California to cause cancer and birth defects and other reproductive harm.

EXAMPLES INCLUDE:
* Engine and generator exhaust
* Engine and generator fuel, and other liquids such as coolants and oil, especially used motor oil
* Cooking fuels
*Cleaners, paints, substances used for vessel repair
* Waste materials that result from wear of vessel components
* Lead from battery terminals and from other sources such as ballast or fishing sinkers

TO AVOID HARM:
* Keep away from engine, generator, and cooking fuel exhaust fumes
* Wash areas thoroughly with soap & water after handling the substances above

# MARPOL TREATY

The USCG now enforces the International Convention for the Prevention of Pollution from ships, referred to commonly as the MARPOL TREATY (marine pollution). This international treaty prohibits the overboard dumping of all oil, garbage, ship-generated plastic and chemicals. There is a placard on vessels over 26' that explains the garbage and plastic dumping laws in detail. Normally this placard is found near a waste receptacle in the cabin or cockpit.

# FUEL SPILLAGE

The federal water pollution control act prohibits the discharge of oil or oil waste (such as from the sump bilge pump) into or upon the navigable waters of the United States or the waters of the contiguous zone. Violators are subject to substantial civil fines and criminal sanctions.

A placard is normally found inside the engine hatch area or in the sump warning of overboard discharge of oil or oily waste.

# Equipment Operation

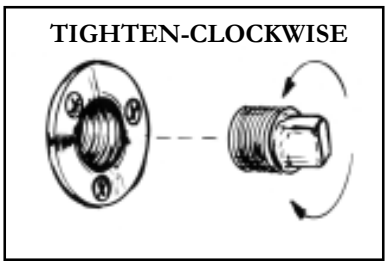
This chapter assists the operator in understanding many of the ***standard*** equipment items on the vessel. Some of the equipment described may not be installed on your boat or the pictorials may not exactly resemble equipment on your boat. Remember, Regal is constantly improving its product line and therefore may make changes in parts and specifications without notice. ***For detailed information on equipment, please refer to the owner's pouch.***

## BASIC EQUIPMENT

### Drain Plug

**CAUTION**

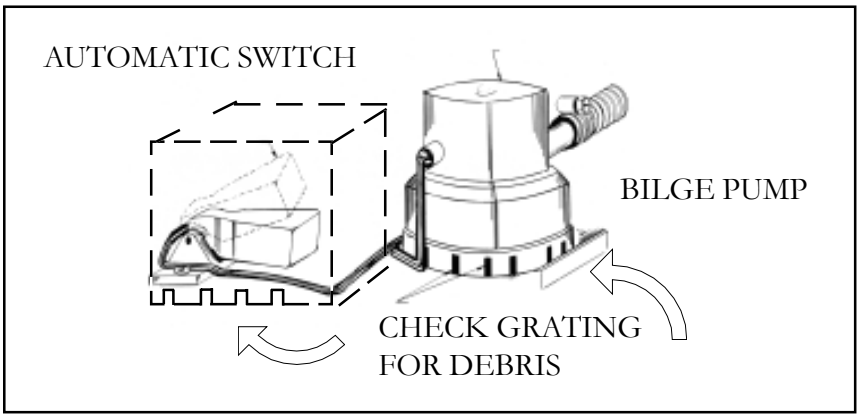
TO PREVENT VESSEL FROM SINKING,
INSTALL DRAIN PLUG!




Your boat is equipped with a garboard style drain plug. Make sure it is installed tightly before launching. *Tighten with a wrench.* Do not use your fingers alone to tighten it. After your outing while the boat is angled on the ramp remove the drain plug to eliminate any bilge water accumulation. If the water stream is diminished, check for foreign objects stuck in the drain hole. Pull the drain plug if dry storing the boat for extended periods especially in colder climates.

## Bilge Pump/Automatic Float Switch

Before each outing be sure to check operation of the bilge pump and automatic switch. Periodically check for bilge debris around the grates of both components. Refer to the bilge pump switch description in Chapter 4 where system details are described and the illustration below.




## Chemical Toilet

Before each outing make sure the chemical toilet is filled with the proper chemicals, paper is available, and the unit is empty. Refer to the systems chapter for more information or the owner's information pouch.

## Fresh Water System

All water systems need to be initially filled to operate. The following steps apply to *pressure water systems* only.

1. Unscrew the "water fill" deck fitting. Fill the fresh water tank with approximately 10 gallons of fresh water. Make sure the water source is safe, clean water.

2. Find the pressure water breaker switch. Turn the switch to the "on" position. The pressure water tank will fill the entire system with fresh water.

3. Open the faucet to allow any air to escape. Close the faucet when there is a steady stream of water without air. You will hear the pressure switch shut off the pump indicating the system is full.

4. If your vessel is equipped with a cold water transom shower repeat step #3. If installed, the transom shower is on the port or starboard aft deck.

5. After these intitial procedures, fill the system near full with fresh water. When water exits the vent the system is full.

6. Check for system leaks as evidenced by the pressure water pump recycling even though no water is being used from the faucet.

**CAUTION**

AVOID PRESSURE PUMP BURN OUT!
DO NOT ACTIVATE THE FRESH WATER
SYSTEM WITH THE WATER TANK EMPTY.

## Compass

The compass is set by the manufacturer to ensure its accuracy. If in doubt it can be zeroed in by using a non-magnetic screwdriver and turning the compensator screws as recommended. Refer to the compass manual in the owner's information pouch. Also, a compass can be checked while underway for varience and deviation by comparing your heading with a nautical chart. Compass error is part of the calculation.

## Bucket Seat Operation

The bucket seat features a handle mechanism that operates multiple seat functions. The separate handles prevent the seat from roatating and sliding fore and aft during operation of the vessel. This provides the operator with a safety margin. Do not alter the seat slide system. To adjust the seat slider follow the instructions and refer the the illustration.

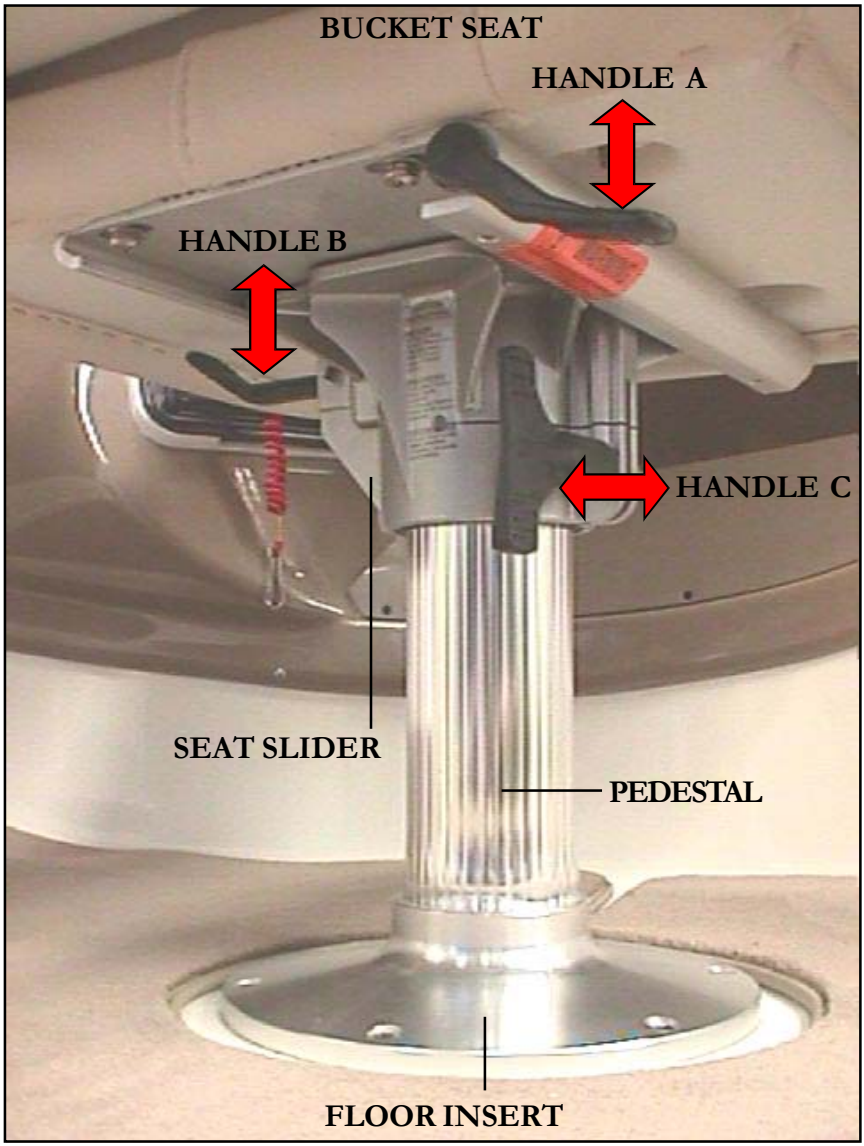
1. To adjust fore and aft seat positions, pull up on handle "A", slide seat to desired location and release the handle. The slide will lock in postion.

2. To rotate seat and adjust the drag control feature for rotation, pull handle "B" up to the horizontal position and release. The handle will maintain the horizontal position. The seat is now able to be rotated 360 degrees. To increase the drag on rotation, turn handle "C" clockwise to desired resistance. To decrease drag, turn handle "C" counterclockwise.

3. To positive lock the rotational feature, push handle "B" down and the positive quick lock feature looks for the next available locking spline. ***Always use positive lock feature when boat is underway.***

**CAUTION**

TO PREVENT BODILY INJURY!
PERIODICALLY CHECK AND TIGHTEN
THE MOUNTING BOLTS
BETWEEN THE SEAT SLIDER
AND THE BUCKET SEAT BOTTOM
ALSO, CHECK THE FLOOR INSERT BOLTS.


BUCKET SEAT
HANDLE A
HANDLE B
HANDLE C
SEAT SLIDER
PEDESTAL
FLOOR INSERT

## Swim Platform/Ladder

**WARNING!**
**MAXIMUM CAPACITY OF SWIM PLATFORM 500 POUNDS 226 KG**
TYPICAL LABEL SHOWN

On integrated or *optional* swim platforms you should make periodic inspections of the swim ladder and hardware that supports the platform to insure that all connections and fittings are tight and in good condition before using it to support weight. Never dive off the swim platform. *Make sure you don't exceed the weight label attached to the swim platform or in the owner's packet.*

**WARNING**

AVOID SERIOUS INJURY OR DEATH!
DO NOT OPERATE THE BOAT
WITH PEOPLE ON TOP OR HOLDING ON TO
THE SWIM PLATFORM STRUCTURE OR HARDWARE.

Use the swim ladder for entering and exiting the water. Make sure you use the appropriate hand rails and ladder rungs. Be sure all body parts are clear of the ladder when folding the ladder up or down and repositioning it on the swim platform. Keep body parts clear of hinged top. Be sure to read and adhere to any written warnings posted on the dash or swim platform regarding ladder load limits. ***Turn the engine off and remove the ignition keys while people are swimming near the boat, using the swim platform or the boarding ladder.*** Also, insist people use the ladder not the outdrive ventilation plate for entering and exiting the vessel Again safety first!

## Center Windshield Latch

The center windshield should be closed and locked at all times the boat is moving. Make sure the 2 locking latches are firmly seated in a horizonal position against the windshield framework. When the boat is not moving it is acceptable to open the center windshield and secure it with the magnetic holders.

**WARNING**

AVOID BODILY INJURY!
CLOSE AND SECURE CENTER WINDSHIELD AT ALL TIMES THE BOAT IS MOVING!

## Gas Grill

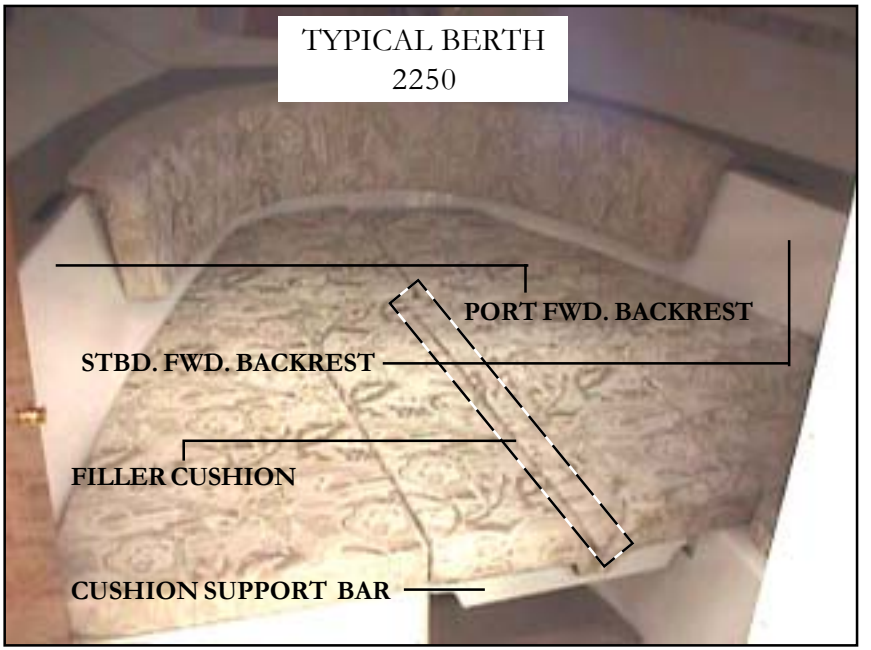
If equipped there are several items to be aware of when operating tne propane gas grill. Be sure the grill is always secured in the deck mount and assumes an overboard position. Never alter the position of the deck mount! Always watch the grill when cooking. Make sure to let the grill cool before stowing it! Do not store propane bottles on the boat. Disconnect the bottle from the grill by unscrewing it. Store the propane bottles in a cool dry environment.

## Cabin Door

On 2250 models, keep the cabin door closed while underway by using the key lock. When opened, make sure the door is secured to the holder.

## Berth Set-Up

On the 2250, the berth cushions can be set up to make a berth. Start by inserting the cushion support bar in the two support brackets. Make sure the bar is seated. Next, remove the port and starboard backrests. Install them as shown in the illustration. Finally, place the filler cushion between the two backrest cushions to fill the gap. Reverse the process to disassemble the berth.




## Cockpit Table

To use the optional teak table, simply insert the tube in the floor receiver and position the table securely to the top of the tube. Rock the table back and forth to make sure it is seated. Use 2 coats of teak oil as needed to keep the table surface well oiled. Wipe with a clean rag. Wait 30 minutes between teak oil coatings.

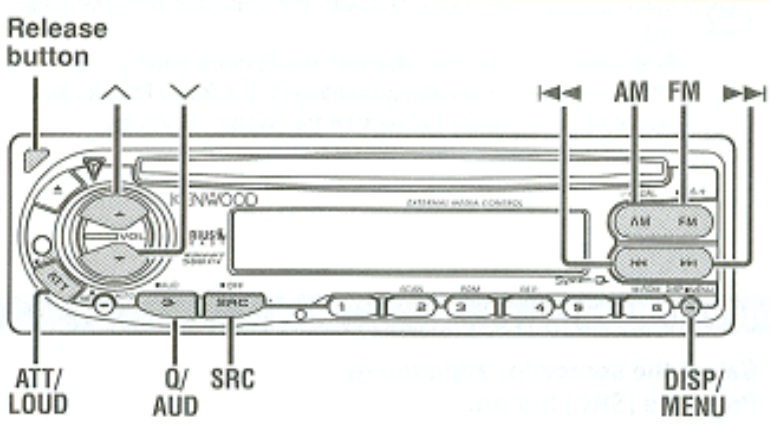
## Typical Stereo

The stereo system features an AM-FM stereo CD player with matched speaker sets. A 10 amp automotive style fuse is located at the rear of the stereo unit. See chapter 7.

The Kenwood stereo features 50 watts x 4 power, CD player, and uses marine speakers. The CD player accepts all types of CD's except the 3" size.

Basic stereo features are covered in this manual. For more detailed information, refer to the stereo manufacturer's manual in the owner's pouch.

**BASIC FUNCTIONS**



**Power**

To energize the stereo, first turn on the stereo breaker located on the main DC panel. This is turn supplies 12 volts to the stereo unit.
Next, press the SRC button.
To deactivate the unit, press the SRC button and hold it down for 1 second.

**Selecting the Source**

Press the SCR button. The display will show Tune for AM-FM, CD, and Disc for external disc (CD changer if equipped).

**Volume**

Press the up button to increase the volume.
Press the down button to decrease the volume.
To rapidly turn down the volume, press the ATT button.
Each time the button is pressed the Attenuator turn on and off.
When its on, the ATT indicator blinks.

**Loudness**

This compensates for low and high tones during low volume.
Press the loud button for at least 1 second.
Each time the button is pressed for at least 1 second the loudness turns on and off.
When it's on, loud indicator is on.

**System Q**

When playing different types of music this feature lets you recall the best sounding preset.
Select the source to set by pressing the SRC button.
Select the sound type by pressing the Q button. Each time the button is pressed the sound setting changes.

| Sound Setting | Display |
|---|---|
| Flat | SQ-1 |
| Rock | SQ-2 |
| Top 40 | SQ-3 |
| Pop | SQ-4 |
| Jazz | SQ-5 |
| Easy | SQ-6 |
| Scan of Flat-Easy | SCAn |

Each setting value is changed with the speaker setting.
First, select the speaker type with the speaker setting.
When the system Q setting is changed, the Bass, Middle, and Treble set in audio control replace the system Q values.

**Audio Control**

Select the source for adjustment by pressing the SRC button.
Enter the audio control mode by pressing the AUD button for at least 1 second.
Select the audio item for adjustment by pressing the AM or FM button. Each time the button is pressed the items that can be adjusted switch as shown below:

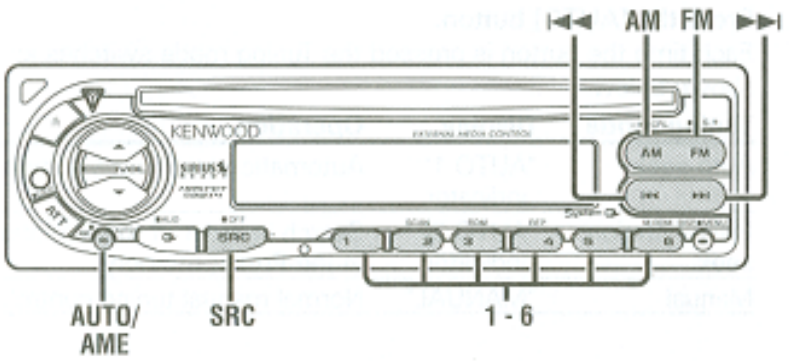
| Adjustment Item | Display | Range |
|---|---|---|
| Base level | Bas | -8 to +8 |
| Mid level | Mid | -8 to +8 |
| Treble level | Tre | -8 to +8 |
| Balance | Bl | Left 15-Right 15 |
| Fader | Fd | Rear 15-Front 15 |

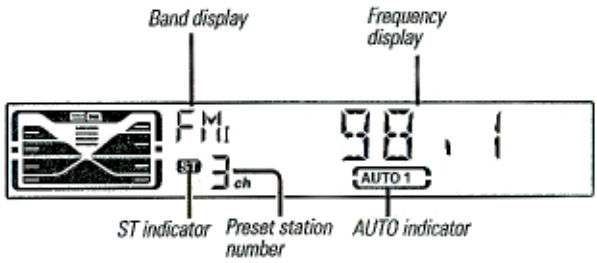
Exit the audio control mode by pressing AUD.

**Clock Adjustment**

Select the clock display by pressing the CLK button.
Enter the clock adjustment mode by pressing the CLK button for at least 2 seconds. The clock display will blink.
Adjust the hours by pressing the AM or FM buttons.
Adjust the minutes by pressing the << or >> button.
Exit the clock adjustment mode by pressing CLK.

**TUNING FUNCTIONS**






**Tuning Mode**

To select the tuning mode press the AUTO button. Each time the button is pressed the tuning mode switches as shown below.

| Tuning Mode | Display | Operation |
|---|---|---|
| Auto Seek | Auto1 indicator | Automatic station search |
| Preset station seek | Auto 2 indicator | Search in order of preset memory stations |
| Manual | | Manual tuning knob |

**Tuning/Selecting A Station**

Select tuner source by pressing the SRC button. Select the tune display.
Select the band by pressing the AM or FM button.
Each time the FM button is pressed it switches between the FM1, FM2 and FM3 bands.
Tune up or down the band by pressing the << or >> button.

**Station Preset Memory**

Select the band by pressing the AM or FM button.
Select the frequency to put in the memory by pressing the << or >> button.
Put the frequency in the memory by pressing the #1 to #6 buttons for at least 2 seconds. The preset number display blinks 1 time.
Note: On both AM and FM bands 1 station can be put in each of the 1 through 6 slots.

**Auto Memory Entry**

This feature allows stations with high reception to be put in memory.
Select the band for auto memory entry by pressing the AM or FM button.
Open auto memory entry by pressing the AME button for at least 2 seconds.
Note: The auto memory closes when 6 receivable stations are put in memory.

**Preset Tuning**

This feature allows for calling up stations in the memory.
Select the band by pressing the AM or FM button.
Call up the station by pressing the #1 to #6 button.

**CD General Hints & Recommendations**

Following are some general principles regarding the use and care of CD's:

1. Keep from touching the recording surface of the CD. Hold it by the edges.

2. Remember CD-R and CD-RW are easier to damage than musical CD's. The music CD's are covered with a clear coat to protect them. Do not stick tape on the CD since it can clog up the internal components.

3. If a *new* CD has a burr on the inner circle take a pen and run it around the circled area to smooth any rough edges.

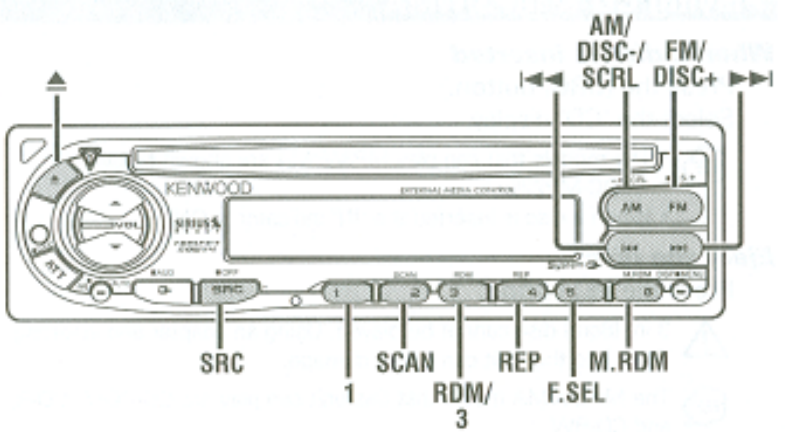
4. Always clean a CD from the center outward; not in a circular motion.

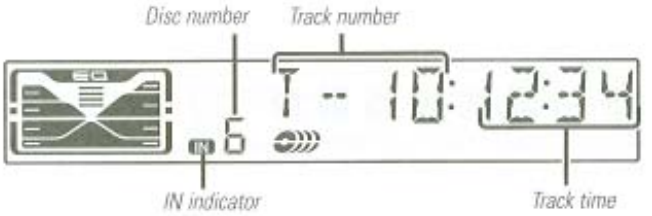
5. Do not use CD's with coloring on the recording surface, or without the disc mark.

6. Do not store CD discs in direct sunlight.

7. Invest in a CD storage unit to help keep dirt off the CD surface.

## CD FUNCTIONS




**Playing A CD**
Insert a CD by pressing the SRC button. Select the CD display. The in indicator should be on.

**Ejecting A CD**
Press the eject button.

**Fast Forwarding & Reversing**
To fast forward hold down the >> button. Release the button at this point to play the CD.
To reverse hold down on the << button. Release the button at this point to play the CD.

**Track/File Search**
This feature lets you search for a song on the disc or in the MP3/ WMA folder.

Press the << or >> button.

**Direct Track/File Search**
This feature does a track/file search by entering the track/file number.

1. Enter the track/file number.
   Press the number buttons on the remote.

2. Do track/file search.
   Press the << or >> button.

*To cancel the operation, press the > II button.*

**Random Play**
This feature lets you play all the CD songs in a random order by pressing the RDM button.
Each time the button is pressed random play turns on & off. When it is on the RDM indicator is on and the track # blinks.

## Sirius Satellite Radio

Sirius satellite radio features over 120 channels of music entertainment completely commercial-free along with sports and news channels. Sirius emphasizes the music and entertainment you want. Channels use the most updated digital filtering available for the clearest sound. Sirius uses three satellites flying over the United States for coast to coast coverage with high elevation angles. The result is a clearer line of sight and less signal blocking.
The system consists of the Kenwood stereo receiver (sometimes called the head unit), Kenwood Sirius radio tuner and antenna.With these components and an active account *(6 month initial free subscription)* your Sirius system can be activated. Following are the activation steps to be taken by the customer:

A. Unit must be completely installed and the antenna must have a clear view of the sky.

B. Turn on the radio and go to satellite mode.

C. Confirm reception by tuning to SIRIUS WEATHER & EMERGENCY//CHANNEL 184. If you are not receiving Channel 184, please refer to the radio manufacturer owner's manual.

D. Call SIRIUS sales support 1-866-580-7234 or customer care at 1-888-539-7474

E. Please have your name, address, phone number and the SIRIUS ID#ESN available for the agent.

## Performance Package

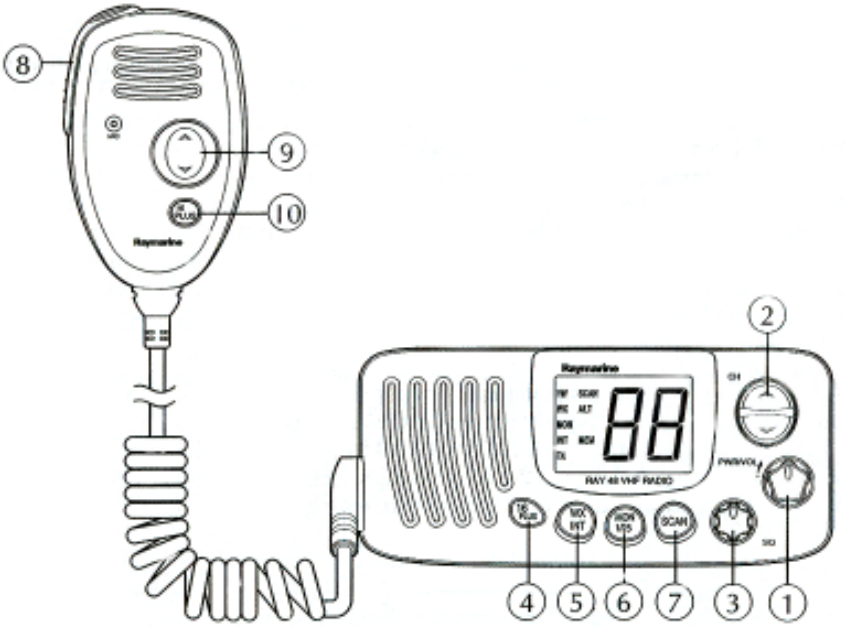
This optional upgrade includes 2 extra speakers and the amplifier to drive the system. The amplifier is located at the port bow storage. The 30 amp fuse for the amplifier is located at the firewall next to the battery switch. Should the fuse blow troubleshoot the system before replacing the fuse. Use the same type and fuse capacity.

## Ipod Adapter

A further option available through Regal is a Kenwood ipod conversion box. With a complete option package onboard your vessel and the addition of an iPod (purchased separately at your favorite music store), songs can be downloaded and played through the system above with all electrical connections compete per manufacturer's specifications and various licensing fees.

## Electronics

Your vessel may be equipped with an *optional* VHF marine radio. It features ship to ship, ship to shore, weather station and U. S. Coast Guard channels. Before each outing check to make sure it is operating properly along with receiving weather data. Make sure someone on the outing beside yourself knows how to use the radio. For more specific information, refer to the owner's pouch.




LAYOUT OF CONTROLS AND CONNECTORS

## TYPICAL VHF CONTROL FUNCTIONS

**1. Volume Control (On/Off)**
Turns the radio on/off and controls the volume of the output to the speaker.

**2. Up & Down Keys**
These keys are used to move the channel numbers up or down. The channel number can be increased or decreased by one with each key press, or will continue to increase or decrease the number as the key is held.

**3. Squelch control**
Provides an adjustable input signal threshold to eliminate RF background noise during no signal conditions. Basically, it sets the signal-to-noise level to where there is a clear signal.

**4. 16 Plus key**

Used for immediate use of channel 16. This channel is a factory preset. The 16 plus key on the microphone has the same functions as the 16 plus key on the radio.

**5. WX/INT key**

When pressed once, the radio becomes a weather channel receiver. A "WX" will be displayed on the LCD along with the weather channel number (0-9). When pressed and held for 2 seconds, this key toggles the transmitter output power between 1 watt and 25 watts.

**6. MON/1/25 key**

When pressed once, the radio enters the MONITOR mode and "MON" is displayed on the LCD. In this mode the radio will scan (monitor) 16 plus priority channel, a selected working channeland a weather channel for the weather alert tone. When pressed and held for 2 seconds this key toggles the transmitter output power between 1 watt (1 watt is displayed and 25 watts ( "1 watt" disappears).

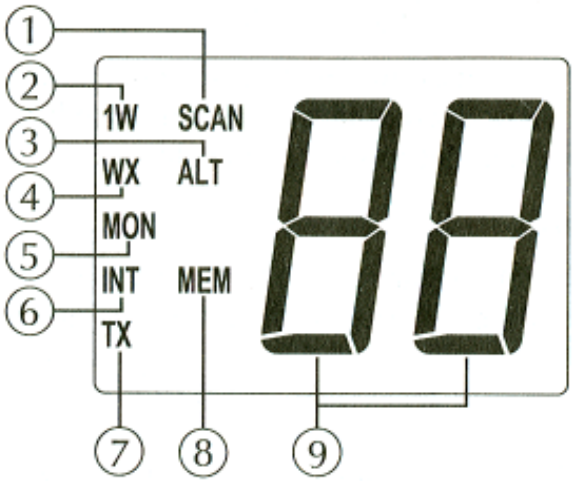
**7. Scan key**
Used to enter all scans and memory scan modes

**8. PTT (Push-To-Talk) Switch**
When pressed, puts the radio into the transmit mode and "TX" will displayed on the LCD.

**9. Up and down keys**
The up and down keys are used to move the channel markers up or down. The channel number can be increased or decreased by 1with each key press, or will continue to increase or decrease the number as the key is held.

**10. 16 PLUS key**
Used to select channel 16 immediately. This channel has been preset to channel 16 prior to shipment. The 16 plus key on the microphonehas the same functionas the 16 PLUS key on the radio.

All of the above keys except PPT will procuce an audible "beep" when pressed.




LCD DISPLAY

**1. SCAN**
Will flash by itself when All-Scan mode is to be initiated or will flash in unison with "MEM" when memory scan is to be initiated.

**2. 1 W (High/Low Power)**
Will be displayed when the transmitter circuits are providing 1 watt of power to the antenna. When the transmitter is supplying 25 watts to the antenna, the "1 W" indication will be extinguished.

3. **ALT (Weather Alert)**
Will blink when a weather alert tone has been detected.

**4. WX (Weather)**
Will be displayed when the channel selected to be monitored is a weather channel.

**5. MON (Monitor)**
Will be displayed when the MON/INT key is pressed. This indicates the radio is in the monitor mode.

**6. INT (International/USA)** Will be displayed when international channels are programmed for use. "INT" is not displayed when US channels are programmed for use.

**7. TX (Transmit)**
Will be displayed on the LCD when the Push-to-Talk (PTT) switch is depressed indicating the transmitting circuits are providing a signal to the antenna.

**8. MEM (Memory)**
Will be displayed when the SCAN key is pressed and held for two seconds, or when the radio is programmed to the MEMORY SCAN mode.

**9. LCD segments**
Will display channel number in use.

# NOTICE

WHEN THE POWER IS ON, THE SYNTHESIZER AUTOMATICALLY PROGRAMS FOR THE USA CHANNEL FREQUENCIES AND SELECTS THE CALLING CHANNEL 16.
REFER TO 16 PLUS OPERATION TO CHANGE THIS CHANNEL.

**Turning On the Volume**

1) Rotate the ON/OFF/VOLUME control clockwise to turn the radio on.

**Setting the Volume**

1) Rotate the Squelch control slowly counterclockwise. Background noise will be heard.
2) Rotate the Volume control for the desired volume level.

**Setting the Squelch**

1) Rotate the squelch control slowly clockwise until the background noise ceases.

**Setting the Power Output**

1) Presss the "MON/1/25 " key for two seconds to toggle between 1 watt output and 25 watt output. The choice of power output is dependent upon the distance of transmission and transmitting conditions. In some US harbors and on certain channels, the radio autimatically selects the 1 watt power output when the channel is selected.

**Selecting the Channel**

1) To select the appropriate channnel, press the up or down channel select keys.

**To Transmit**

1) Select the desired mode (USA or INT) by pressing and holding the WX/INT key for 2 seconds. When "INT" is displayed International mode is selected. When extinguished, USA mode is active. Then press the PUSH-TO-TALK switch and speak into the microphone using a clear normal voice.

2) When the power is initially turned on, press the PUSH-TO-TALK switch, the radio will be ready for transmission on CH16 or a user selected priority channel (16 PLUS)

As a safety feature, the Ray 48 is designed to inhibit transmission if the Push-To-Talk is pressed continuously for over five minutes. If this occurs, audible beeps will sound and "TO" (Time Out) blinks on the LCD until the Push-To-Talk switch is released. After releasing the Push-To-Talk switch, the radio is ready fro reception.

**NOTICE**

INITIAL COMMUNICATION CONTACTS ARE USUALLY MADE OVER CHANNEL 16 AS ALL SHIPS AND SHORE STATIONS MONITOR THIS CHANNEL. THEN A SHIFT TO A WORKING CHANNEL WILL BE NECESSARY.

**To Select A Weather Channel**

1) Press the WX/INT key, then use the up or down key to select the desired weather channel from 0 to 9. When this mode is selected, the transmitter is alway inhibited.

2) If a weather alert signal is received on your selected WX channel (when in the monitor mode) there is a five-second audible alarm generated. To cancel the audible alarm, press any key.

**The 16 PLUS (priority) Channel**

The 16 Plus channel has been preset to channel 16 prior to shipment from the factory, but the 16 Plus channel can be changed to another number, the the exception of all weather channels.

1) Press the up or down key to select the desired channel. Then press and hold the 16 Plus key for three seconds. An audible beep tone will confirm that the selected channel is stored in memory as the 16 Plus channel.
2) To reselect channel 16 as the 16 PLUS channel, repeat step 1 for channel 16.

**Channel Memory**

The Ray 48 can store into memory all U.S. or International channels. The stored channels will be scanned during Memory Scan Mode.

1) Channel memory. To put a channel onto memory, select the channel to be stored with the up or down arrows. Push and hold the SCAN key for approximately two seconds until a beep is heard and "MEM" is displayed on the LCD. This procedure can be repeated for all U.S or International channels.
2) Memory clear. To clear a channel from memory, select the channel to be cleared with the up or down arrows. Push and hold the "SCAN" key for approximately two seconds until a "beep" is heard and "MEM" disappears from the LCD.

**Scan Modes**

1) All-Scan Mode

If no channels are stored in memory, when the SCAN key is pressed once, "SCAN" will begin to flash on the LCD. In three seconds, if no other keys are pressed, the radio will begin scanning all channels ( except weather channels) as long as no signal is received. If a signal is received, the scan will stop and monitor the receiving channel.If the signal is lost for 5 seconds, the radio will resume scanning.

If the scan has stopped on a received signal, you may resume scanning by pressing the SCAN key. To cancel the scan mode, press the SCAN key once while the radio is scanning.

2) Memory Scan Mode

If one or more channels are stored in memory, when the SCAN key is pressed "SCAN" and "MEM" will begin flashing simultaneously on the LCD. If no other key is pressed, the radio will begin scanning all channels in memory in three seconds. As with All-Scan, if a signal is received, the scan will stop on the receiving channel until the signal is lost for five seconds or the SCAN key is pressed. To cancel memory scan, press the SCAN key while the radio is scanning.

If you have one or more channels in memory and want to initiate All-Scan, perform the following:

Press the SCAN key. "SCAN" and "MEM" will flash on the LCD. Press the SCAN key again within three seconds and "MEM" will disappear from the LCD leaving only "SCAN" flashing. All-Scan will begin in three seconds if no other key is pressed.

**Master Reset**

To preform a master reset, press and hold the 16 PLUS key while turning the unit on. This feature clears all channels from memory and programs the 16 PLUS feature back to channel 16.

**Monitor Mode**

Before entering the Monitor Mode you must first select the WX channel you wish to monitor for the weather alert tone. Next, you must select a working channel to be monitored for traffic.

1) Press WT/INT, then scroll to the desired weather channel with the arrow keys.

2) Press the 16 PLUS key to exit the weather band and return to normal mode.

3) Use the arrow keys to select the desired working channel.

4) Press the MON/1/25 key to begin monitor mode. Press the MON/1/25 key again to cancel Monitor Mode.

As an example, let's say we have selected channel 68 as our working channel. WX2 as our weather channel and the 16 PLUS key is programmed for channel 16. When MON/1/25 is pressed, the radio begins to scan Priority Channel 16, the working channel 68 and weather channel WX2.

**Working Channel**
If a signal is received on CH68, the scan will stop on CH68, but continue to monitor 16 PLUS and the selected weather channel every 5 seconds.

**16 PLUS (priority) Channel**
If while scanning, a signal is received on the designated 16 PLUS channel, the scanning will stop on 16 PLUS as long as the signal is being received. If the signal ceases for more than five seconds, the scanning will continue.

**Weather Channel**
Until a weather alert tone signal is received on WX2, the scan will stop on WX2 briefly, but will not give any audio output. When a weather alert tone is received, the monitor will stop and an audible alarm will sound, When the audio alert ends in five seconds, the emergency weather broadcast will be heard. To silence the alarm, push any key.

**CAUTION**

OPERATION ON CHANNELS NOT DESIGNATED FOR USE BY YOUR CLASSIFICATION OF VESSEL OR ON INTERNATIONAL CHANNELS WITHIN THE US TERRITORIAL WATERS IS A VIOLATION OF FCC RULES & REGULATIONS AND MAY RESULT IN SEVERE PENALTIES.

| SELECTED MARINE CHANNELS & THEIR USAGE | |
|---|---|
| Channel Number | Channel Usage |
| 01A | Port Operations & Commercial<br>Found Only in New Orleans/Lower Mississippi Area |
| 02 through 04 | Port Operations |
| 05 | Port Operations<br>Found Only in Houston, New Orleans & Seattle |
| 06 | Intership Safety |
| 07A | Commercial |
| 08 | Commercial (Intership Only) |
| 09 | Boat Calling, Commercial & Non-commercial |
| 10 | Commercial |
| 11 | Commercial. VTS in select areas. |
| 12 | Port Operations. VTS in select areas. |
| 13 | Intership Navigation Safety (Bridge to Bridge). Ships greater than 20 meters in length maintain listening watch |
| 14 | Port Operations. VTS in select areas. |
| 15 | Environmental (Receive Only) Used by class C EPIRBS |
| 16 | International Distress, Safety & Calling. |
| 17 | State Control |
| 18A | Commercial |
| 19A | Commercial |
| 20A | Port Operations |
| 21A | U.S. Coast Guard Only |
| 22A | Coast Guard Liaison & Maritime Safety Information Broadcasts as announced on channel 16 |
| 23A | U.S. Coast Guard Only |
| 24-28 | Public Correspondence (Marine Operator) |
| 60-62 | Port Operations |

| Channel Number | Channel Usage |
|---|---|
| 63A | Port Operations & Commercial.<br>VTS. Available in New Orleans/ Lower Mississippi |
| 64, 65A, 66A | Port Operations |
| 67 | Commercial. Used for bridge-to-bridge in lower Mississippi River. Intership Only |
| 68,69 | Non-Commercial |
| 70 | Digital Select Calling (Voice Traffic Not Allowed) |
| 71 | Non-Commercial |
| 72 | Non-Commercial (Intership Only) |
| 73,74 | Port Operations |
| 75,76 | Ch 16 Guard Band. RX Only |
| 77 | Port Operations. (Intership Only) |
| 78A | Non-Commercial |
| 79A<br>80A | Commercial. Non-Commercial in Great Lakes. |
| 81A | U.S. Government Only. Environmental Protection Operations |
| 82A<br>83A | U.S. Government Only. |
| 84-87 | Public Correspondence. (Marine Operator) |
| 88A | Commercial. (Intership Only) |

**CAUTION**

THE TRANSMITTER OF YOUR VHF IS DISABLED WHEN CHANNEL 15, 75, 76, OR WX0-WX9 IS DISPLAYED.

## Channel Discription & Usage Guide

**Emergency**

Channel 16

If:
- Your ship is **sinking, or on fire**
- Someone has been lost overboard
- There exists grave and imminent danger

Use this distress procedure:
- Select Channel 16
- Say "Mayday, Mayday, Mayday."
- Give call sign and boat name
- Give location of boat
- Describe emergency
- If no answer, repeat; then try another channel

**Caution**
**Every ship at sea is to obliged to give absolute priority to radio communications relating to ships in distress - it is vital that false distress calls or messages not be broadcast.**

**Calling**

**Channel 16 & Working Channel**

If - you wish to establish communications with another station

And - you know which working channel the station is monitoring

Then - initiate the call directly on that working channel

If - you wish to establish communications with another station

And - you do not know what working channel the station may be monitoring

Then - initiate the call on channel 16. After contact is made switch to a working channel.

**NOTE: Due to congestion on channel 16 caused by frequent hailing o other vessels, the FCC has approved channel 9 as a second hailing channel.**

Avoid excessive calling and radio checks

Always monitor before transmitting

Never interrupt emergency communications

**Monitoring**

**Channel 16 & Working Channel**

When - your VHF station is turned on and it is not being used to exchange communications

You Must - monitor channel 16

As an operating convenience, many stations employ a second receiver so that they can monitor a working channel and channel 16 simultaneously.

**Intership Safety**

Channel: 6

Vessels: Any

Use: Communicating navigational and weather warnings to other ships

Communicating with U.S. Coast Guard stations or other vessels during search and rescue operations

Between: Ship-to-ship only

Comments: Do not use for routine communications. This is a safety channel.

**U.S. Coast Guard**

Channel: 22

Vessels: Any

Use: Working channel for exchange of communications with stations of the U.S. Coast Guard.

Between: Ship to U.S. Coast Guard ship, coast to aircraft stations

Comments: U.S. Coast Guard does not regularly monitor this channel. Establish contact on channel 16 and shift to channel 22 as directed.

**Navigation**

Channels: 13

Vessels: Any

Use: Safety Communications pertaining to the maneuvering of vessels or the directing of vessel movements

Ship-to ship and secondarily ship-to-coast

This is commonly called the Bridge-to-Bridge channel. Large vessels and towboats depend on this channel for their safe navigation. Railway or highway bridges which open for ship navigation often operate on this channel.

Bridge-to-Bridge stations must reduce power to one watt for routine operations.

**Port Operations**

| | |
|---|---|
| Channels: | 5, 12, 14, 20, 65, 66, 73, 74 [77] |
| Vessels: | Any |
| Use: | Messages relating to the operational handling, movement and safety of vessels in or near ports, locks and waterways. |
| Between: | Ship-to ship or ship-to-coast |
| Comments: | Channel 77 is limited to communications to and from commercial pilots concerning the movement and docking of vessels. |
| **Note:** | **Channels 11, 12, 13 and 14 are used for vessels traffic service on the Great Lakes, St. Lawrence Seaway and designated major ports.** |

**Non commercial (Boat Operations)**

| | |
|---|---|
| Channels: | 19, 68, 69, 71, 72, 78 |
| Vessels: | Recreational boats and any others not used primarily for commercial transport. |
| Use: | Communications pertaining to the needs of the vessel (i.e., fishing, rendezvous, maneuvers, berthing, scheduling of repairs, provisioning, etc.) |
| Between: | Ship-to-ship or ship to limited coast stations |
| Comments: | Channel 72 may not be used for ship to coast communications. Channel 9 is shared with Commercial users. |

If you regularly monitor one of these channels with a second receiver, please notify frequently-called stations of this practice. Help reduce congestion on channel 16.

**Commercial**

| | |
|---|---|
| Channels: | 7, 8, 9, 10, 11, 18, 19, 67, 79, 80, [88] |
| Vessels: | Those used primarily for commercial transport of persons or goods, or engaged in servicing other vessels |
| Use: | Communications pertaining to the purpose for which the vessel is used |
| Between: | Commercial transport vessels (ship-to-ship) or between commercial transport vessels and limited coast stations |

Channel 8, 67 and 88 may not be used for ship-to-coast communications

Recreational boats are not permitted to use these channels

Channel 88 not available on Great Lakes and St. Lawrence Seaway.

**Marine Operator**

| | |
|---|---|
| Channels: | 24, 25, 26, 27, 28, 84, 85, 86, 87, 88 |
| Vessels: | Any |
| Use: | To place a telephone call to any location in the world or to a vessel outside of your transmitting range |
| Between: | Vessels and public coast stations |
| Comments: | Contact the marine operator on the channel assigned to your navigating area. If unable to determine this channel, use channel 16. |

Be patient. Do not interrupt calls in progress. Avoid excessive calling if the operator does not answer - give the operator a chance to reply.

**State Control**

Channel: 17

Vessels: State and local government

Use: Coordination, regulation and control of boating activities and the rendering of assistance to vessels.

Between: Ship and coast stations associated with state and local governments.

**Environmental**

Channel: 15

Vessels: Any (receive only)

Use: Broadcast of information concerning the environmental conditions in which vessels operate - weather, sea conditions, time signals, notices to mariner, hazards to navigation

Between: One-way broadcast from coast to ship stations

**Note:** **Currently used for Class C EPIRB emergency signals.**

**Weather**

Channels: WX1, WX2, WX3

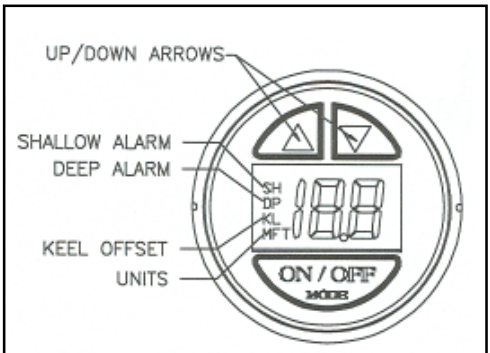
Vessels: Any

Use: Continuous weather information from NOAA (National Oceanic and Atmospheric Administration)

Between: One-way broadcast from NOAA to any interested parties

Comments: Receive only. You are not allowed to transmit on these frequencies.

## Depth Finder/Sounder



DEPTH GAUGE W/ FUNCTIONS

In theory the depth gauge picks up a bottom signal sent through a transducer to the helm gauge unit which is converted to readings in feet, meters, or fathoms and displayed on the gauge. The unit features shallow or deep water alarms, both of the audio and visual type, and keel offset.

### General Description

The optional depth finder will display depths of 2-199 feet, 1-92 meters, or 1-54 fathoms. To accommodate greater depths to be displayed in the "ft" feet mode the depth sounder will automatically change to "F" fathoms mode and continue to display depths to around 54 fathoms.

When the depth decreases below 200 feet the display will return to the "ft" mode. Limits on depth will vary depending on transducers and bottom conditions.

If the reading is less than 19.9 feet, meters, or fathoms, 1/10th increments will be displayed. If the reading is more than 19.9 feet, all readings will be in whole numbers.

The depth finder features an audible and LCD displayed depth alarm with adjustable shallow and deep limits and a depth below keel offset feature. These settings once made are stored in memory and will remain even if the battery is not connected.

## Operation

**Power On.** When the helm is powered up by the key switch 12 volt DC energy is available at the depth gauge along with the remainder of the instrument cluster. You do not need to press the "ON/OFF MODE" keypad.
The LCD will illuminate showing the depth and the type of units selected; feet (FT), meters (M), or fathoms (F). To deactivate the depth sounder, hold the "ON/OFF MODE" keypad for 4 seconds. If you press the "ON/OFF MODE keypad again the unit will be reactivated.

**Depth Alarm.** *Shallow mode:* If you press the "ON/OFF" MODE" keypad again the "SH" shallow depth alarm setting is displayed. This is the shallowest water that will energize the alarm. Press and hold the up or down arrow keypads to adjust the reading to the desired depth.

**Depth Alarm.** *Deep Mode:* By pressing the "ON/OFF MODE" keypad displays again the "DP" deep depth alarm setting. This is the deepest water that will energize the alarm.
Press and hold the "UP" or "DOWN" keypads to adjust the reading to the desired depth. When the shallow depth setting is read by the depth finder, the "SH" will flash on the LCD and the audible alarm will sound in a rapid sequence. When the deep depth setting is read by the depth finder the "DP" will flash on the LCD and the audible alarm will sound at 2 beeps per second.

**Note:** To fully deactivate the alarm, reset it to zero. Pressing the "ON/OFF MODE" keypad temporarily deactivates the alarm. To reactivate the alarm press the "ON/OFF MODE" keypad until the depth reading appears.

**Keel Offset.** By pressing the "ON/OFF MODE" keypad again displays the "KL" keel offset setting. It can be set so the depth finder shows the depth below the transducer or the depth under the keel. Press the "UP" or "DOWN" arrow keypads to adjust the reading to the desired depth no further than 19.9 feet.
An example would be if the keel bottom is 3 feet below the transducer and you desire the depth sounder to read the depth below the keel, the display should be adjusted to read 3.0 FT.

**Note:** Once the keel offset is programmed, the shallow and deep alarms will be energized by the depth under the keel.

**Units.** Pressing the "ON/OFF MODE" keypad again displays "UN" on the LCD indicating the units mode.
Press either the up or down arrow keypads to set the units desired to (FT) feet, (M) meters, or (F) fathoms. Once these units are set, they will remain the same for all modes. By pressing the "ON/OFF MODE" keypad again returns the depth finder to normal operation.

## Canvas

Standard canvas includes a bimini top with boot, bows and hardware. Also, side and aft curtains are available. A tonneau cover protects the bow seating area.

To install a typical *bimini* top, unzip the top boot and remove it from the bimini top. Store it for future use. Unroll the canvas and install the front canvas snaps in place. Pull one of the canvas straps aft until tight and install the clip to the eyelet. Install the other canvas strap to the other side.

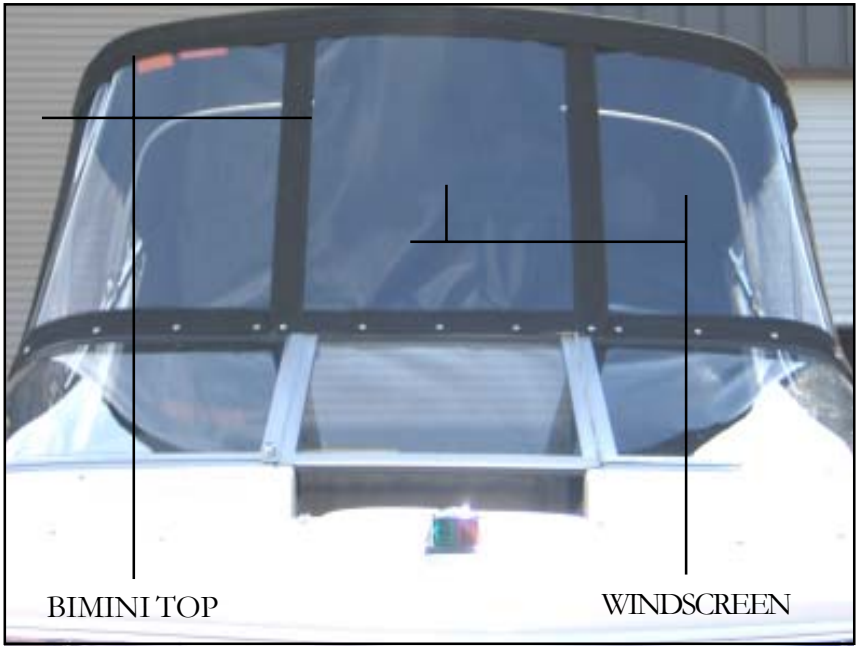
Zip the optional windscreen to the bimini top. Then attach the windscreen to the windshield snaps. It may be necessary to unzip a portion of it to access the snaps. Install the port and starboard side curtains. They should be marked for easy identification. If not, a visual inspection will indicate their side. Install the aft curtain to the bimini top rear section and zip it in place. It is a good idea to work out of the boat by fastening one side of the aft curtain and working your way out of the boat. Remember to take down the canvas above idle speeds. Inspect each canvas piece for dryness especially the clear window glass material. ***Roll*** all canvas parts before stowing them.

Install the tonneau (bow) cover to snaps and lower center windshield. Install tonneau cover pole in canvas receiver and tighten thrumb screw. Ensure all lanyard pins are fully inserted and tightened completely.

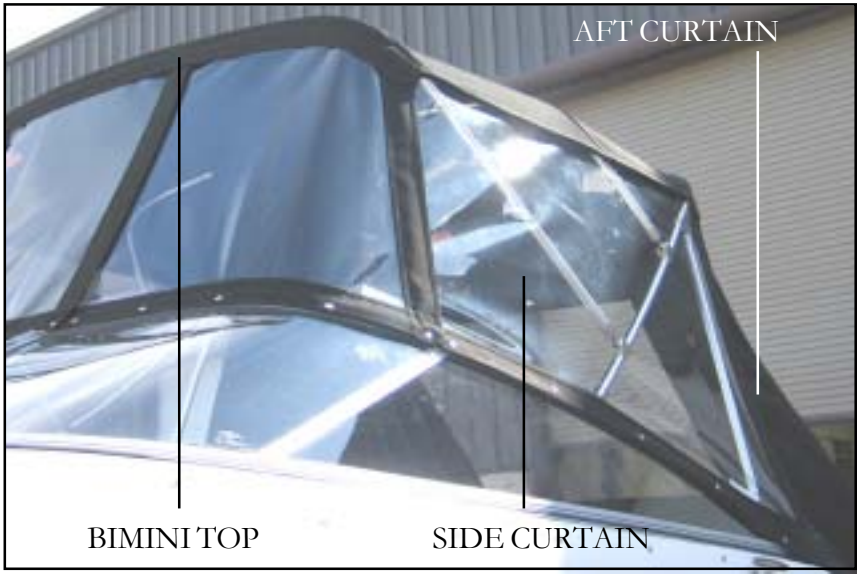
TYPICAL COCKPIT COVER

## Cockpit Cover

The cockpit cover shown above installs over the windshield and snaps to the deck. To install the cockpit cover, note that on the bow end of the cover there is a seam on the inside which separates the port and starboard sides. Align this seam with the center snap below the windshield. Complete snapping the canvas to the outside and then down each gunnel to admidships.Your boat may have several cockpit poles. Their purpose is to keep the canvas tight. Notice on the underside of the cover there are areas of reinforced canvas material. These are for the cockpit cover poles. This pole(s) is adjustable by opening it to the desired length and tightening the thumb screw. You may find it helpful to mark the poles so you can install the poles in the same spot each time. Continue to snap the cockpit cover to the deck snaps. When you reach the rear corner leave enough room to allow a safe exit.




**TYPICAL CANVAS-FRONT VIEW**




**TYPICAL CANVAS-SIDE VIEW**

## CAUTION

PREVENT POSSIBLE INJURY AND/OR PROPERTY DAMAGE!
THE COCKPIT COVER IS DESIGNED TO PROTECT THE BOAT FROM THE ELEMENTS.
**DO NOT TRAVEL WITH THE COCKPIT COVER INSTALLED AS IS NOT DESIGNED FOR HIGHWAY USE!**

## CAUTION

PREVENT BODILY INJURY AND PROPERTY DAMAGE.
DO NOT TOW BOAT WITH CANVAS UP.
TOW BOAT WITH CANVAS DOWN AND STORED IN THE COCKPIT.
FOR WATER CRUISE USE,
PLACE THE BIMINI OR CONVERTIBLE TOP IN THE CRUISE POSITION.

## Volvo Neutra-Salt System

Neutra-Salt Engine Flushing System is available as a Volvo option on gasoline engines only. Its purpose is to flush salt deposits that develop in the engine's cooling system. It is intended for engines that operate in brackish or salt water areas only. The system is ***not*** intended for fresh water use.

**CAUTION**

THE NEUTRA-SALT SOLUTION WILL FREEZE. IF FREEZING CONDITIONS ARE POSSIBLE, DRAIN THE ENTIRE SYSTEM.

The Neutra-Salt solution leaves a corrosion inhibiting coating on all metal engine parts. The solution travels through the engine via a solenoid (after a rocker switch is activated) and a set of connecting hoses. The manufacturer recommends using the system at the end of the boating outing. Extra solution (Volvo # 41103103 available in quarts and gallons)should be available from your Regal dealer.

FILL & TEST SYSTEM

1. Pour the quart bottle of Neutra-Salt concentrate into the reservior. Wear protective eye-wear & gloves since the concentrate may cause an eye irritation. In case of contact, flush eyes throughly with water for 15 minutes.
2. Mark the fluid level on the reservoir. To prevent hearing loss, avoid prolonged exposure to the audible alarm on the engine, particularly in confined spaces. The alarm can reach 120 decibles.
3. Re-connect the power supply.
4. Connect water supply (flushette) so that the engine can be run.
5. Start the engine. Run at idle.

6. Hold the rocker switch on for 45 seconds. Turn the engine off and then release the switch.
7. Check the reservoir; the fluid level should have dropped 1/4".

If the reservoir does not drop 1/4" it may be necessary to repeat steps 1-6. Run the engine at 1500-2000 rpm"s to help begin the fluid flow. For normal operation, run engine at idle.

8. If the fluid is still not flowing from the reservoir, check as follows.
a. Hoses for knicks and leaking clamps.
b. Check the vent hole in the reservoir cap for blockage.
c. Check that the solenoid opens when the switch is on and key is on run.
d. Check the fuse.
e. Check the solenoid connection.
f. Check for a secure ground connection.

# Cosmetic Care & Maintenance

## COSMETIC CARE

This section covers the care and maintenance of your Regal boat. Many cosmetic care topics including exterior hardware, upholstery, fiberglass and canvas are described. Also, major equipment and systems are covered. As always, refer to the owner's information pouch and the manufacturer's owner's manual for detailed procedures.

### Upholstery

Cockpit and interior vinyl require periodic cleaning to maintain a neat appearance and to prevent the build up of dirt and contaminants that may stain and reduce the vinyl life if they are not removed. The frequency of cleaning depends on the amount of use and conditions to which the vinyl is subjected.

Most common stains can be cleaned using warm, soapy water and clear rinses. Scrubbing with a soft bristle brush will help loosen soiled material from embossed surfaces and under welting. If the stains are not removed with the above method use a mild cleaner such as Fantastic. This cleaner should be used only as needed and not the normal means.

With more stubborn stains, rubbing alcohol or mineral spirits may be tried cautiously. Widespread solvent use can severely damage or discolor vinyl. Try to remove stains immediately before they have a chance to penetrate the surface of the vinyl.

Powdered abrasives, steel wool, or industrial strength cleaners are not recommended for cleaning our vinyl. Lacquer solvents will cause immediate damage. Dilute chlorine bleach before using. Do not wax the vinyl as it may cause cracking. Always wear protective gloves and make sure there is sufficient ventilation when cleaning vinyl. Wear eye protection.

Remember that suntan oil will damage vinyl. Use suntan lotion instead of suntan oil. Exposure to the sun is a natural enemy of vinyl upholstery. For maximum life, keep the vessel covered with a cockpit cover when not in use.

## Carpet

Use approved cleaners on carpet. Always try on a test area first. Many spots and spills can be removed using a cleaner combined with a clean, white terry towel. Try not to soak an area excessively and do not use solvents because most interior carpet is rubber backed and glued in place. Solvents and abrasives will break down the backing and fibers.

## Plastics

Use plastic cleaners and polishes recommended for marine use only. Use proper applicators. Read all instructions carefully. Test the product in a small area first. Use a soft rag and always rinse the surface with water. Ammonia based cleaners and abrasives will damage plastic parts.

**NOTICE**

NEVER CLEAN PLASTIC SURFACES WITH A DRY CLOTH OR GLASS CLEANING SOLUTIONS CONTAINING AMMONIA. NEVER USE SOLVENTS OR WIPE WITH ABRASIVES.

## Interior Fabrics

Clean flat good interior fabrics with dry cleaning fluid style cleaners approved for use with soft fabrics. Allow adequate ventilation and follow the label instructions carefully. Use a soft cleanser with feldspar to clean stubborn marks or stains on wallpaper. Normal interior vinyl such as the headliner and head need a mild soap and water solution. Rinse immediately with clean water and wipe dry. Always test an area with a cleaner before applying it to a larger area.

## Fiberglass & Gelcoat

**WARNING**

AVOID BODILY INJURY!
WAXED GELCOAT SURFACES CAN BE VERY SLIPPERY. DO NOT WAX NORMALLY USED AREAS OF THE DECK, LINER, OR GUNWHALES. DO NOT WAX ANY TEXTURED OR NON-SKID SURFACES SUCH AS FLOORS, WALK-WAYS, STEPS, LADDERS OR SWIM PLATFORMS. USE EXTREME CAUTION WHEN WALKING ON GELCOAT. USE HAND AND BOW RAILS. ALWAYS WEAR NON-SLIP FOOTWEAR.

Routine maintenance is the only practical way to keep the surface of your boat looking shiny and new. Most objects left outdoors will gradually deteriorate from exposure to the sun, water, dust and pollution. Such outdoor exposure can cause your boat's gelcoated surface to change or fade. Darker colors tend to fade more rapidly than lighter colors because they absorb more of the sun's rays (ultraviolet and infrared).

Basic maintenance includes monthly washing of the boat's surface to remove normal accumulation of soil and stain.

Use a mild detergent such as dishwashing powder or liquid. Do not use automatic dishwasher detergent. Avoid any kind of alkaline cleaners such as tri-sodium phosphate (TSP), abrasives, bleaches and ammonia. For best results use cleaners that are recommended for fiberglass. To help maintain the luster of gelcoat, follow the waxing recommendations and schedules as indicated below. ***Never wax non-skid surfaces of the vessel. See the warning on page 3 of this chapter.***

**NOTICE**

WIRE BRUSHES, SCOURING PADS, OR OTHER ABRASIVE TYPE MATERIALS AND SOLUTIONS SHOULD NEVER BE USED ON THE HULL OR DECK OF YOUR BOAT. THEY CREATE SMALL SCRATCH MARKS THAT WILL COLLECT MARINE GROWTH AND OTHER FOREIGN MATERIALS.

It is recommended that you wax the gelcoat surface twice yearly to prevent loss of gloss and to protect the finish. Use only waxes for fiberglass and follow the label instructions. Apply a 3' x 3' section at a time using clean applicator cloths or a buffing bonnet. When a haze develops, use a power buffer at low speeds (1200-2000 rpm) to remove the haze. Keep the buffer moving to avoid heat build-up. The power buffer is very efficient at removing contaminants from gelcoat. Never wax gelcoat in the direct sun.

When the washing and waxing as recommended does not restore the shine it may be necessary to use a fine rubbing compound. Do not apply rubbing compound in direct sunlight. A power buffer at low speed does an excellent job to remove impurities from the gel coat that cause dulling. Use ***light*** pressure and keep the buffer moving. Rewax after compounding to buff the surface.

"Hairline cracks" or "spider webbing" could develop in the gelcoat surface of a hull or deck. This can be caused by impact or other factors. Small air pockets or gouges may also occur through normal

wear. These do not affect the strength of the hull or deck and can be repaired by yourself, a marine professional or a Regal dealer.
The affected area should be chipped or sanded away and a thin layer of color matched gelcoat applied. This layer is then sanded smooth and buffed to its original luster.
Use a stiff britle brush and non abrasive compound to clean non-skid. Most minor scratches, nicks, and dents can be removed by compounding the surface. Marine type compounds can be found at most auto body supply stores. Specify a number 25 which is a coarser compound up to a number 55 being less coarse. Various glazes and polishes are available as needed. Ask your marine professional or Regal dealer for more information. Fiberglass hulls are strong but they can be damaged. A fiberglass hull has virtually no internal stresses. Thus when a part is broken or punctured, the rest of the hull retains its original shape. A severe blow will either be absorbed or result in a definite localized break. A break of this nature should be checked and repaired by a marine professional or a Regal dealer.

## Minor Repairs

You will need the following materials for minor repairs:

- Gelcoat
- Clear Liquid Catalyst
- Putty Knife
- Razor Blade
- Fine Sandpaper (400,600,1000)
- Wax Paper (to cover repair area)

**WARNING**

AVOID BODILY INJURY!
GELCOAT & FIBERGLASS RESIN ARE FLAMMABLE
WORK IN A WELL VENTILATED AREA FREE FROM
OPEN FLAMES. DO NOT SMOKE!

For minor repairs refer to the following procedure:

1. Clean the area to be repaired and get rid of any wax or grease residues.

2. Clean out scratches, chips, and nicks.

3. Sand area to be repaired so gelcoat will bond.

4. In a separate container, measure only the amount of gelcoat you will need. Mix a ratio of 2% ratio of catalyst to the amount ofgelcoat being used ( a spoonful of gelcoat will require only a drop or two of catalyst). Do not pour any unused portions of the gelcoat/catalyst mixture back into either original container.

5. Apply gelcoat to area leaving a slight lift above the surface.

6. Cover the area with wax paper. It will help the mixture to set up faster.

7. Remove wax paper and shave off any extra gelcoat with a razor blade.

8. After the area is shaved smooth, start with the 400, 600, and finally the1000 grit sand papers.

9. Buff the area with compound, polish and a finish wax. You may notice a difference between the repaired area and the original fin ish due to the natural weathering prcess.

## Canvas

Boat canvas is in most cases subjected to more severe punishment than practically any other type of material. Moisture, dirt and chemicals from industrial fallout, heat, ultraviolet rays and salt water are all factors which accelerate the deterioration of your boat canvas.

These elements can cause serious damage if left unchecked.
The boat top and other canvas supplied on your Regal boat are manufactured from top quality materials to provide you with years of trouble free service. The following information on the care, cleaning and proper storage of the fabrics and fasteners that make up your marine canvas is being provided to help you maintain the appearance and ease of operation.
Sunbrella is used on most Regal tops, aft curtains, camper enclosures, bow tonneau and cockpit covers. Sunbrella is a woven fabric made from 100% solution dyed acrylic fiber. It is color fast and will withstand long term exposure to the sun (ultraviolet rays) without excessive fading.
Sunbrella is a woven fabric. Even though it is treated with water repellency some "misting" through the fabric is typical. With new canvas, the greatest potential for leakage is through the sewn seams. Because Sunbrella and the long term thread used is synthetic, the holes created by sewing will not swell up and seal when exposed to water as cotton does. Usually the movement of the fabric in use will move the fibers enough to seal the holes. You may apply Apseal or Uniseal to the seams to speed up this process.
When the canvas is new, the fit will normally be tight. It is designed this way because Sunbrella stretches as it ages, The initial tight fit allows for a suitable fit for the life of the canvas. The Sunbrella fit will vary slightly in the heat, cold, and humid environments.

## Sunbrella Cleaning Instructions

Sunbrella should be cleaned regularly before substances such as dirt, roof particles, etc., are allowed to accumulate on and become embedded in the fabric. The fabric can be cleaned without being removed from the boat. Simply brush off any loose dirt, hose down, and clean with a mild solution of natural soap in lukewarm water. Rinse throughly to remove soap. DO NOT USE DETERGENTS! Allow to air dry. For heavily soiled fabric, remove the top from the frame.

Soak the fabric in a solution that has been mixed to the following proportions.: 1/2 cup of Clorox bleach and 1/4 cup of Ivory or Lux soap (liquid or soap) per each gallon of lukewarm water. Allow the fabric to soak until the bleach has killed the mildew and the stains can be brushed out with a common kitchen scrub brush. Rinse the fabric throughly in cold water to remove all the soap. This may require several rinsings. Incomplete rinsing can cause deterioration of sewing threads and prohibit the fabric from being properly retreated. Allow the fabric to dry completely. **DO NOT STEAM PRESS OR DRY IN AN ELECTRIC OR GAS DRYER!** Excessive heat can damage and shrink the fabric since it is heat sensitive.

This method of cleaning may remove part of the water and stain repellence that was applied to the fabric during its manufacture. It is recommended to retreat with such water repellency products as Apseal and Uniseal. We do not recommend any wax based treatments such as Thompson's Water Seal or any of the silicone products such as SC-15 or Aqua-Tite. Wax based products prevent the fabric from breathing, and encourage mildew growth while the silicone products interact with the original fluorocarbon finish and seem to cause a rapid loss of water repellency. Scotchguard has not been found to be very effective for restoring water repellence to Sunbrella. It seems to work well in the short run, but doesn't maintain it's performance very long.

## Clear Vinyl, Zipper & Snap Care

Never store canvas wet or in an unventilated, moist area. Always roll the canvas instead of folding. This is of particular importance on side curtains or any other part with the clear vinyl "glass". Roll the top carefully around the bows and cover with the storage boot provided. The clear vinyl "glass" used in side curtains, aft curtains, visors, and camper enclosures is very susceptible to heat and cold. Keep vinyl curtains from touching metal tubing to minimize burning the vinyl.

If the boat is stored with top, side curtains and aft curtain in place, heat build up inside the boat may discolor the vinyl.

To clean the clear "vinyl" glass, use a solution of Ivory or Lux soap,

liquid or flakes, and lukewarm water. Allow to air dry. Never use any type of abrasive cleaner as it will scratch the "vinyl" glass. There are many cleaners and scratch removers on the market specifically for clear vinyl. Handle the clear curtains carefully. They are soft and prone to scratching.

Canvas parts are designed with zippers. When zippers are new they can be a little difficult to use. Zip carefully without forcing the zipper or the material. They will loosen with use. A zipper lubricant may be used to help new zippers as well as maintaining used ones. The most vulnerable part of the zipper is the starts. Use care when starting the zipper.

Canvas snap fasteners should be unsnapped as close to the button as possible. Never remove canvas by pulling roughly on the edge of the material. This can damage the canvas as well as the fasteners. Use petroleum jelly on snaps to keep them from developing corrosion especially in harsh environments.

## Metal

Keep all stainless steel and other metal parts rinsed and wiped dry. To maintain their finish annually polish the stainless steel and other bright works at least annually. Use commercially available metal products and read the labels carefully before use. Refer to the flyer in the owners information pouch. Most marinas and boating retail outlets carry metal care products.

## Hull Bottom

Never use wire brushes or highly abrasive scouring pads on your hull bottom. It could damage the gel coat surface or the bottom paint. The bottom of your boat needs to be clean since the build up of natural coatings from water or marine life can potentially create drag and affect your boat's performance. Contact a marine professional or Regal dealer for more information.

| FREQUENT STAINS/CLEAN-UP STEPS | 1 | 2 | 3 |
|---|---|---|---|
| Coffee, Tea, Chocolate | B | | |
| Permanent Marker* | E | B | C |
| Household Dirt | A | B | |
| Grease | D | B | |
| Ketchup, Tomato Products | A | B | |
| Latex Paint | A | B | |
| Oil Base Paint | D | B | |
| Mustard | A | B | C |
| Suntan Oil | A | B | |
| Asphalt/Road Tar | D | B | |
| Crayon | D | B | |
| Engine Oil | B | | |
| Spray Paint | B | | |
| Chewing Gum | D | A | |
| Shoe Polish* | D | B | |
| Ballpoint Pen* | E | B | A |
| Lipstick | A | B | |
| Eyeshadow | E | B | |
| Mildew* | C | B | A |
| Wet Leaves * | C | B | A |

A= Soft brush; warm soapy water/rinse/ dry

B= Fantastik cleaner

C= One tablespoon ammonia, 1/4 cup of hydrogen peroxide, 3/4 cup of warm water/ rinse/dry

D= Scrape off residue ( use ice to lift gum)

E= Denatured alcohol/rinse/dry

* These products contain dyes which leave permanent stains.

# MAINTENANCE

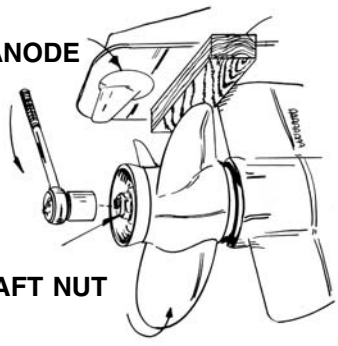
## Propellers

Out-of-balance or nicked props will effect performance or cause vibration. Damaged props should be replaced, but those that are chipped or bent can usually be reconditioned by a marine dealer or a propeller repair facility. When cruising, consider carrying a spare set of props onboard because many marinas do not carry a full inventory of replacement propellers. Refer to the manufacturer's engine manual for appropriate stern drive and inboard propeller replacement.

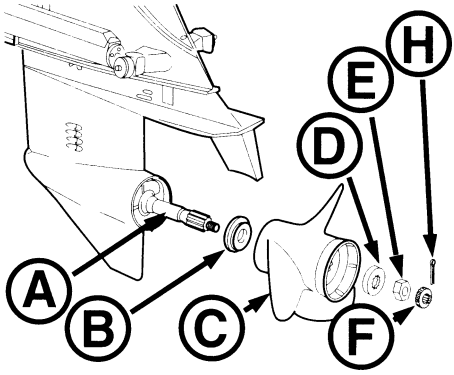
Be sure to make a note of the propeller diameter and pitch while the vessel is in dry dock. They are pressed into the prop for easy reading. In an emergency an aluminum propeller blade can be straightened by laying the propeller blade on a 2 x 4 and hammering the bent portion of the blade until straight. This procedure will assist the operator in reaching port so he can have the propeller repitched.

It is advantageous to carry the needed tools to change propeller(s). Use the following procedure to remove ***single*** stern drive propellers. This method provides a safety margin from sharp propeller blades especially those with stainless steel propellers. The 2 x 4 when laid across the ventilation plate allows safe removal of propeller. With MerCruiser alpha drives make sure the washer tabs are bent up before trying to remove the prop nut. With Volvo SX drives, remove the propshaft cotter key and splined washer first to access the nut.

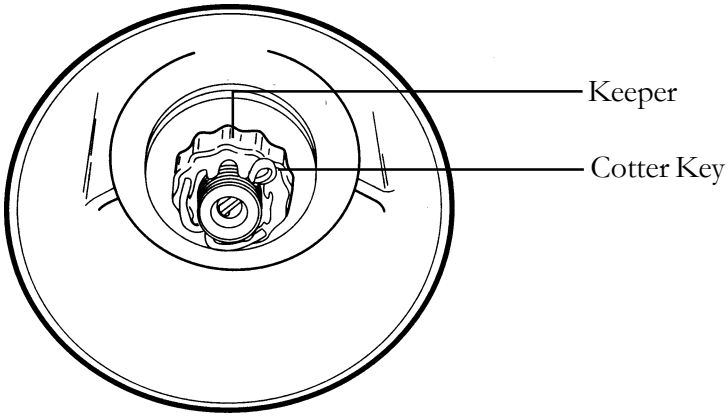
**TYPICAL PROPELLER CHANGING- MERCRUISER ALPHA**



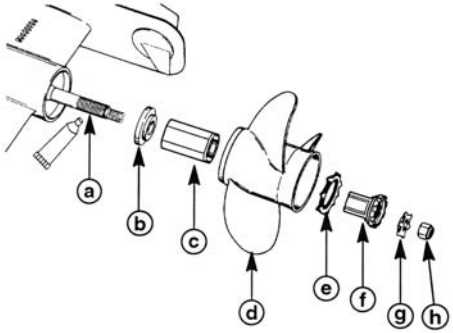
## VOLVO SINGLE PROPELLER SX INSTALLATION




1. Coat the propeller shaft with marine grease.
2. Place the thrust bushing on prop shaft with inner taper toward gearcase to match taper on propeller shaft (A & B).
3. Slide propeller on shaft completely (C).
4. Place thrust washer (D) on propeller shaft splines.
5. Shift the remote control into reverse with the key switch in the off position.
6. Install & tighten the propeller nut (E)to 70-80 ft. lbs.
7. Install keeper (F) on prop nut until aligned with cotter key hole.
8. Install cotter key (H) and bend tabs over. See illustration below.



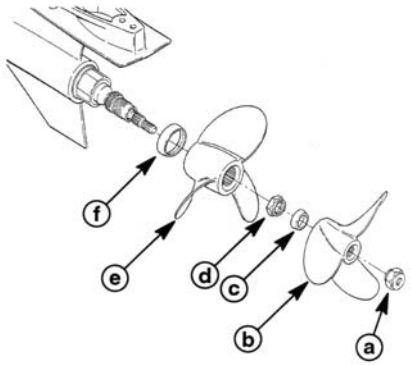
## MERCRUISER ALPHA & BRAVO ONE




**Alpha One and Bravo One**

- **a** - Apply Lubricant on Propeller Shaft Splines
- **b** - Forward Thrust Hub
- **c** - Flo-Torque Drive Hub
- **d** - Propeller
- **e** - Continuity Washer
- **f** - Drive Sleeve Adapter
- **g** - Tab Washer
- **h** - Locknut

## MERCRUISER BRAVO THREE




**Bravo Three**

- **a** - Rear Propeller Locknut
- **b** - Rear Propeller
- **c** - Rear Propeller Thrust Hub
- **d** - Front Propeller Locknut
- **e** - Front Propeller
- **f** - Front Propeller Thrust Hub

## Steering

Regals feature rack or rotary style steering systems that features a cable with assistance through the engine power steering pump. As you turn the wheel the force is applied through the system to a hydraulic cylinder atached at the engine rear and attached through the engine power steering pump hoses.

With the engine running, check the engine power steering pump levels before each outing. Add the appropriate power steering fluid. Periodically inspect the entire steering system for tightness and signs of wear and leaks including the steering wheel. Lubricate the steering shaft at the engine. Refer to the manufacturer's engine manual in the owner's pouch for additional information along with the maintenance chart in this chapter.

**CAUTION**

AVOID PERSONAL INJURY AND PROPERTY DAMAGE!
ABRUPT TURNS ABOVE 30 MPH MAY RESULT
IN LOSS OF CONTROL.
STEERING RESPONSE AT HIGH SPEEDS
CAN BE VERY SUDDEN.
ABRUBT TURNS MAY CAUSE YOU
TO CROSS YOUR OWN WAKE.
JUMPING A WAKE, SUDDEN TURNS, AND INCREASES
OR DECREASES IN SPEEDS MAY BE DANGEROUS.
THE OPERATOR MUST MAKE SURE THAT ALL
PASSENGERS ARE SEATED SECURELY
BEFORE MAKING SPEED CHANGES.

## Battery

Frequently check your battery terminals for corrosion build-up. If you find a greenish, powdery substance, remove the cable connections

**WARNING**

TO PREVENT BODILY INJURY!
WEAR GOGGLES, RUBBER GLOVES
AND A PROTECTIVE APRON
WHEN WORKING WITH A BATTERY.
BATTERY ELECTROLYTE CAUSES SEVERE EYE
DAMAGE AND SKIN BURNS.
IN CASE OF SPILLAGE, WASH AREA WITH
A SOLUTION OF BAKING SODA AND WATER.

clean both the both the terminals and the connectors with a wire brush. When the cleaning is finished reconnect the battery cables and coat the terminal with an approved grease or petroleum jelly to help prevent further corrosion.Check the electrolyte level at least every 30 days, more often in hot weather. The level should be maintained between the top of the battery plates and the bottom of the fill cap opening. Add *distilled* water as needed after charging the batteries or periodically as needed. Do not overfill because sulfuric acid could run over and cause burns or an explosion.

**WARNING**

TO PREVENT BODILY INJURY!
BATTERIES CONTAIN SUFURIC ACID (POISON)
WHICH ALSO CAN CAUSE BURNS.
AVOID CONTACT WITH THE SKIN, EYES & CLOTHING.
IF CONTACTED, FLUSH WITH WATER AT LEAST 15
MINUTES. IF SWALLOWED, DRINK LARGE AMOUNTS
OF WATER OR MILK. FOLLOW UP WITH MILK OF
MAGNESIA, BEATEN EGG OR VEGETABLE OIL. GET
MEDICAL ATTENTION IMMEDIATELY!

Batteries should be charged outside the boat. Do not smoke or bring flames near a battey that is being or has recently been charged. The hydrogen gas generated by battery charging is highly explosive.
Set batteries on a block of wood rather than concrete since this procedure will help the batteries from losing their charge.
Do not allow a metal object or loose wires to spark across battery posts while working close to the battery. Contact across terminals will cause a short circuit and electrical burns or personal injury may result.
Tighten all battery connectors securely. Check their tightness by pulling on the connectors. They should not move from their tightened position. Be sure to reinstall the positive boot over the battery terminal after tightening the battery post connection.While using the boat, use the volt meters to monitor the charge level of each battery bank. Monitor the charge with the engines turned off (static condition).
The engine alternators recharge the batteries. A fully charged battery will indicate between 12.3 and 12.6 volts on the voltmeter. Readings below this could indicate a dead battery cell or a charging system malfunction which should be checked by a marine professional.

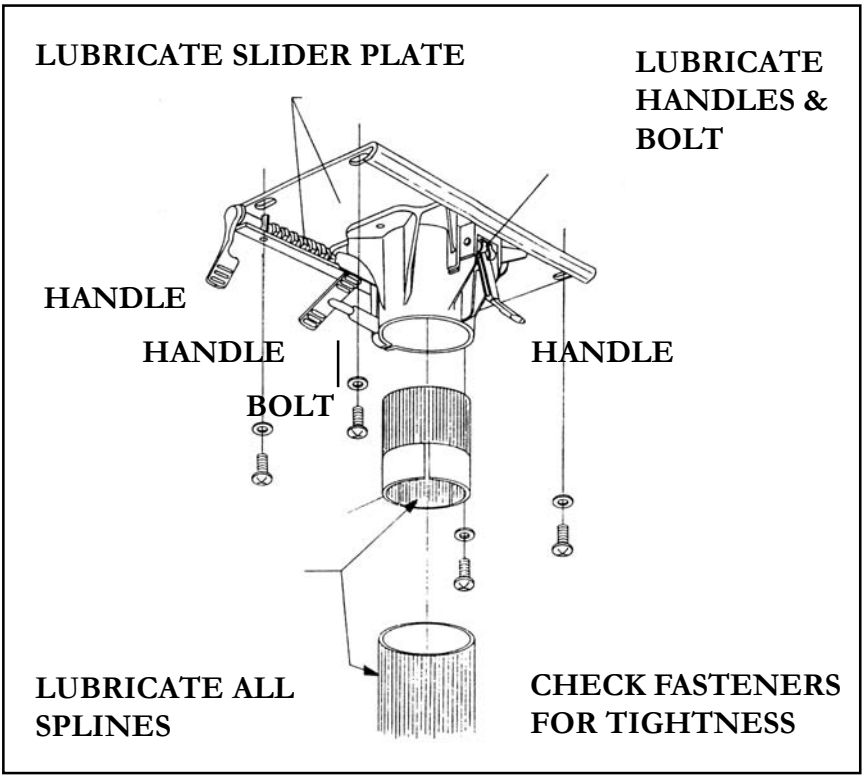
## Remote Control

The remote controls at the dash control box and the cable attachment at the engine should be tight and shift without binding.
Shift and throttle controls at both the engine and helm areas must be checked on a periodic basis. At the engine end, make sure all control cable hardware is tight and control cable brackets are secure. An application of silicone spray on the cable ends periodically will keep control cables working freely and fights corrosion. At the helm end check to make sure the control box hardware is tightly secured. Contact your Regal dealer for further assistance.

## Seating

The bucket seat slider needs periodic inspection and maintenance. Loosen the swivel knob located on the slider and pull the slider off the pedestal. Inspect all fasteners and metal for fatigue. Lubricate the points shown in the illustration with a marine type lithium grease. Use a paint brush to apply the grease. Also, use silicon spray for areas that can not be accessed with the grease. Reassemble the slider to the pedestal with the delrin cup positioned correctly.

**BUCKET SEAT SLIDER MAINTENANCE**

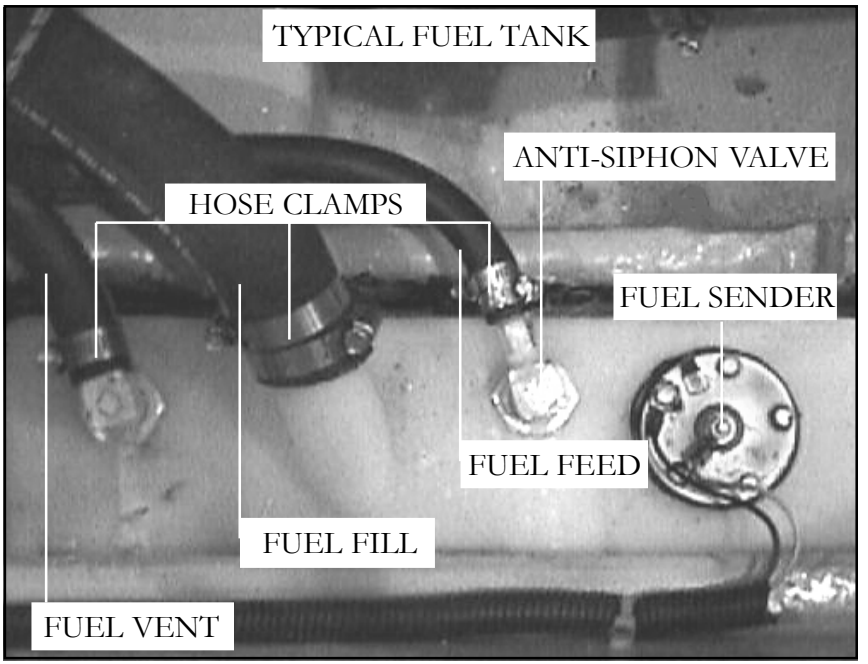


## Bilge Pump

The bilge pump is usually installed in the engine compartment just below the engine front. Check for foreign materials stuck in the strainer area or discharge hose.
Check all clamps and electrical connections for tightness. A quick check of the bilge pump automatic float switch is afforded by lifting up on the float and listening for the pump operating. Look around the float area for foreign debris and remove as necessary.

## Fuel Tank & Fittings

Periodically (at least once a year) inspect the fuel tank components for loose clamps at the vent, fill and feed locations. Examine each hose for signs of deterioration and leakage. Check the fuel sender for loose bolts, nuts, and leaks at all areas of contact. Also, inspect the fuel tank for signs of leakage or abrasion. Tighten all components as needed.

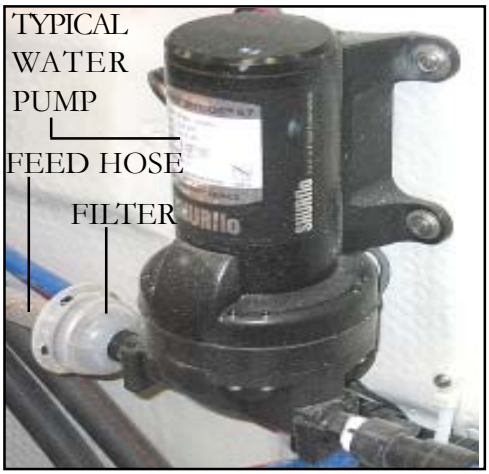


Do not remove the spring and ball assembly in theanti-siphon valve. It can be cleaned with compressed air. Should the component be faulty (normally a fuel surge problem at mid to high speed ranges) replace it. Check the fuel fill pipe hose connection at the deck. Normally, there is an access plate which can be removed for inspection. Make sure the black ground wire is tightly secured. For further information, contact your closest Regal dealer or marine professional.

## Chemical Toilet/ Pump Out Fittings

This self-contained unit requires periodic rinsing with soap and water. Keep the unit flushed out as needed.
Vessels with the ***optional*** pump out fitting need to run fresh water through the hose to keep debris from clinging to the hose inside surfaces after each pump out.

## Fresh Water System

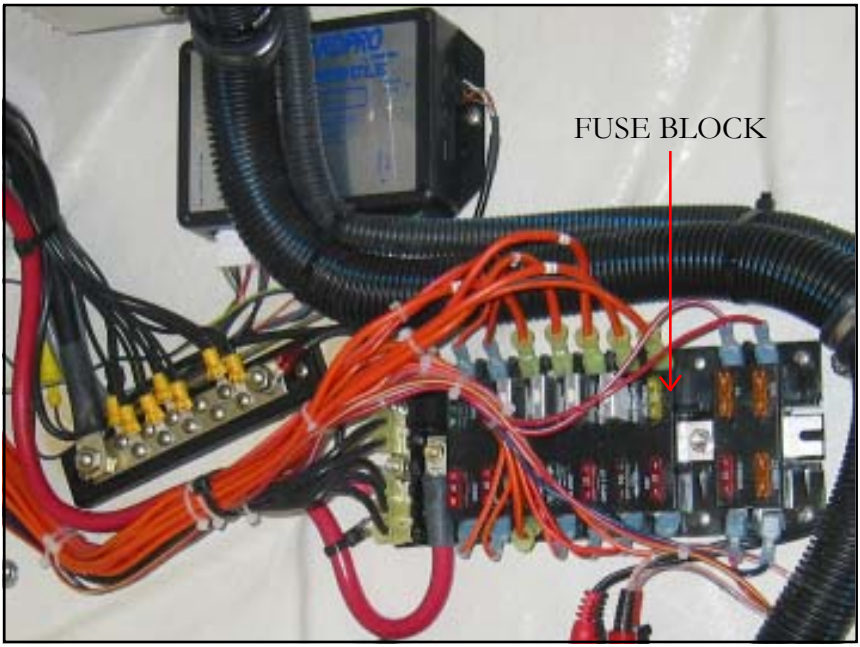



Inspect the fresh water system hoses and fittings periodically. A sign of a water leak is the pressure water pump running intermittently with the faucet off. There is a fresh water filter located on the pressure water pump. Clean the element of debris and deposits as needed. Reassemble and perform a system leak check.For information purposes ther e is a pressure pump cut-out switch mounted on the water pump. It controls the water system line pressure. When the system reaches normal pressure the switch cuts out until a water demand resumes.

## Fuses

The dash features individual fuses for onboard equipment. Should an overload develop, that individual fuse will "blow". After determining the system fault, replace the fuse with the exact size. The fuse panel is located at the helm area. Carry extra fuses for emergencies. Fuses can be purchased from a marine store or you Regal dealer.

TYPICAL FUSE PANEL




There is an access under the dash to many of the wires. On the 2250 there is an access plate at the cabin forward bulkhead. Periodically check the mounting blocks on all wiring components to make sure all connections are tight. Refer to the illustration for more information.

## Stereo

The stereo requires little maintenance. Protect the unit from water, dirt and ultra-violet damage.When washing the interior do not discharge water directly at the stereo unit. As with any CD unit clean your CD's to keep them from skipping. This process also aids in keeping dust out of the unit. For further information, refer to your stereo owner's manual located in the pouch.

## Blower

Check the blower hoses to ensure they are fastened in the bilge properly and there are no holes in them. The hose connected to the blower needs to be 3/4 down in the bilge to evacuate fumes properly. Check all blower hoses to ensure there are no pockets anywhere that can catch rain water. All hoses should follow a sloped up to down pattern. All vents need to be checked for debris.

Make sure the blower motor is securely fastened and all hose clamps and or tie wraps are tight. Also, check the electrical connectors for tightness.

# VOLVO MAINTENANCE GUIDE

| FUNCTION *Each Trip* | ADJUST | CHECK | LUBE | FILL | REPLACE | TIGHTEN |
|---|---|---|---|---|---|---|
| Anodes | | * | | | | |
| Leaks, Cooling System | | * | | | | |
| Stop Switch | | * | | | | |
| Leaks, Fuel System | | * | | | | |
| Oil, Engine | | * | | * | | |
| Oil, Drive | | * | | * | | |
| Safety Equipment | | * | | | | |
| Shift System | | * | | | | |
| Fluid, Power Steering | | * | | * | | |
| Steering Cable | | * | | | | |
| *Monthly* | | | | | | |
| Battery | | * | | | | |
| Exhaust Sys | | * | | | | * |
| *Every 50 Operating Hours* | | | | | | |
| Battery Connections | | * | | | | * |
| All Belts | | * | | | | * |
| Exhaust System Hoses,Clamps | | * | | | | * |
| Fasteners | | * | | | | * |
| Fuel System | | * | | | | |
| Water Pump Impeller | | * | | | Every 2 years | |

## VOLVO MAINTENANCE GUIDE CONT.

| FUNCTION *Per Season* | ADJUST | CHECK | LUBE | FILL | REPLACE | TIGHTEN |
|---|---|---|---|---|---|---|
| Bellows & Clamps Drive | | * | | | Every 2 Years | |
| Exhaust Maniflold, Risers | | * | | | | |
| Carb, Fuel Filter | | | | | * | |
| Water Pump Impeller | | | | | Every 2 Years | |
| Leaks, Fuel System | | * | | | | |
| Oil, Engine | | | | | * | |
| Oil, Drive | | | | | * | |
| Oil Filter, Engine | | | | | * | |
| Propeller & Shaft | | * | * | | | |
| Remote Control Cable | | * | | | | |
| Spark Plugs | | | | | * | |
| Spark Plugs Wires, Boots | | * | | | | |
| Steering System Cable | | | * | | | |
| Throttle Cable | | * | * | | | |
| Serpentine where applicable | | * | | | | |
| Carb Adj. | * | | | | | |
| Engine Alignment | | * | | | | |
| Gimbal Bearing | | | * | | | |
| Universal Joints & Splines | | * | | | | |

## MERCRUISER MAINTENANCE GUIDE

| | EACH TRIP | WEEKLY | EVERY 2 MTHS. | EVERY YEAR (100 HRS) | EVERY 3 YRS. (300 HRS) | EVERY 2 YRS. | EVERY 5 YRS. |
|---|---|---|---|---|---|---|---|
| Oil, Engine | * | | | | | | |
| Oil, Drive | * | | | | | | |
| Oil, Trim Pump | * | | | | | | |
| Fluid, Power Steering | * | | | | | | |
| Salt Usage, Flush Cooling | * | | | | | | |
| Water Pick-Ups | | * | | | | | |
| Anodes | | * | | | | | |
| Fuel Pump Site Tube | | * | | | | | |
| Battery Connection | | * | | | | | |
| Propeller Shaft/Nut | | | * | | | | |
| Engine, Corrosion Guard | | | * | | | | |
| Touch-Up Paint | | | | * | | | |
| Engine Oil & Filter | | | | * | | | |
| Drive Oil,Change | | | | * | | | |
| Fuel Filter, Replace | | | | * | | | |
| Steering & Remote Control | | | | * | | | |

## MERCRUISER MAINTENANCE GUIDE CONT.

| | EACH TRIP | WEEKLY | EVERY 2 MTHS. | EVERY YEAR (100 HRS) | EVERY 3 YRS. (300 HRS) | EVERY 2 YRS. | EVERY 5 YRS. |
|---|---|---|---|---|---|---|---|
| U-Joints, Splines & Bellows | | | | * | | | |
| Lube Gimbal Bearing & Engine Coupler | | | | * | | | |
| Test MerCathode Bravo's | | | | * | | | |
| Engine Mounts, Retorque | | | | * | | | |
| Check ignition parts, timing | | | | * | | | |
| PCV Valve, Replace | | | | * | | | |
| Flame Arrestor, Clean | | | | * | | | |
| Belts, Inspect | | | | * | | | |
| Leaks & Tightness, Exhaust Sys. | | | | * | | | |
| Disassemble Seawater Pump | | | | * | | | |
| Leaks & Tightness, Cooling System | | | | * | | | |
| Clean seawater section, cooling system | | | | * | | | |
| Replace Coolant | | | | | | * | |
| Lube U-joints | | | | * | | | |

## Engine

Each engine and sterndrive package is unique and quite complex. A select portion of the maintenance items are covered in this chapter including lubrication specifications and general periodic maintenance. Because of the advanced ignition and fuel injection systems used on marine engines it is best to contact your Regal dealer for more of the detailed service procedures.

**CAUTION**

AVOID ENGINE DAMAGE!
FOLLOW ALL ENGINE BREAK-IN PROCEDURES AS RECOMMENDED BY THE ENGINE MANUFACTURER. FAILURE TO FOLLOW THE BREAK-IN PROCEDURE MAY VOID THE ENGINE AND STERNDRIVE WARRANTY.

**CAUTION**

AVOID ENGINE DAMAGE!
DO NOT RUN ENGINE AT A CONSTANT RPM FOR PROLONGED PERIODS OF TIME DURING BREAK-IN PERIOD. CHECK ENGINE OIL OFTEN.

**CAUTION**

AVOID ENGINE DAMAGE!
DO NOT RUN ENGINE OUT OF WATER UNLESS YOU HAVE AN OPTIONAL FLUSHETTE. FOLLOW MANUFACTURER'S ATTACHING & RUNNING INSTRUCTIONS.

## Recommended Lubricant Specifications

### Volvo Engine

*Checking the Engine Oil*

| VOLVO ENGINE OIL CHART | |
|---|---|
| Lowest Anticipated Temperature | Recommended SAE Viscosity Oils |
| 32 Degrees F & Above | SAE 30* SAE 20W50 SAE 15W50 |
| O Degrees To 32 Degrees F | SAE 20W20 |
| Below 0 Degrees F | SAE 10W |

Volvo 3.0 uses approximately 4 quarts with oil filter.

Volvo 4.3 uses approximately 4.5 quarts with oil filter.

Volvo 5.0, 5.7 uses approximately 6 quarts with oil filter.

Volvo 8.1 uses approximately 9 quarts with oil filter.

* SAE 30 Volvo Penta DuraPlus synthetic motor oil for API Service CE/SG (Volvo # 3851230-7). If the recommended oil is not available, use ***pure synthetic*** multi-viscosity oil.

1. Remove the dipstick. The oil level must lie between the 2 marks on the dipstick. Add the recommended oil to maintain the proper level.

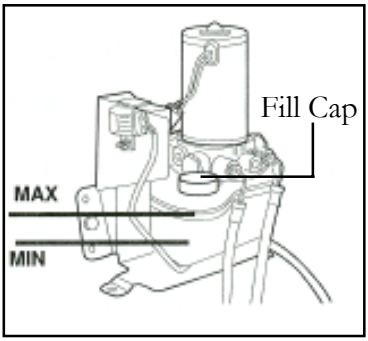
2. Recheck the engine oil dipstick level.

*Note: All fluid recommendations are based on this manuals printing date. Regal is not responsible for the accuracy of the information since it can change at any time. For more detailed information and procedures check your engine operators manual or call a Regal dealer servicing the product line.*

# NOTICE

PREVENT ENGINE DAMAGE!
DO NOT ALLOW THE CRANKCASE OIL LEVEL TO RECEDE BELOW THE ADD MARK, AND DO NOT FILL ABOVE THE FULL MARK. OVERFILLING RESULTS IN REDUCED ENGINE LIFE, HIGH OPERATING TEMPERATURES, FOAMING & LOSS OF POWER.

*Checking the Power Trim/Tilt Fluid Level*




1. At least once annually preferably at the start of the boating season check the system flluid level. Begin with the stern drive trimmed in (down) as far as possible.

2. Remove the fill cap on the power trim pump reservoir.

3. Check the flluid level. It should be between the minimum and maximum marks on the reservoir.

4. If needed add Volvo Penta DuraPlus Power Trim/Tilt and Steering Fluid.

5. Replace the fill cap and tighten cap securely.

*Checking Power Steering Fluid*

1. Check the power steering fluid before each boating outing. Remove the steering reservoir and check the fluid level. If the engine has not been running use the "COLD" mark. Use the "HOT" mark for engines that have been running at normal operating temperature as indicated by the temperature gauge.

2. The flluid shoud be between the minimum and maximum marks on the dipstick. If needed, fill to the proper level with Volvo Penta Dura Plus Power Trim/Tilt & Steering Fluid. DO NOT OVERFILL THE STEERING PUMP RESERVOIR.

**CAUTION**

PREVENT STEERING OPERATION IMPAIRMENT
OR COMPONENT DAMAGE!
NEVER FILL THE POWER STEERING SYSTEM
WITH AN UNKNOWN OIL.

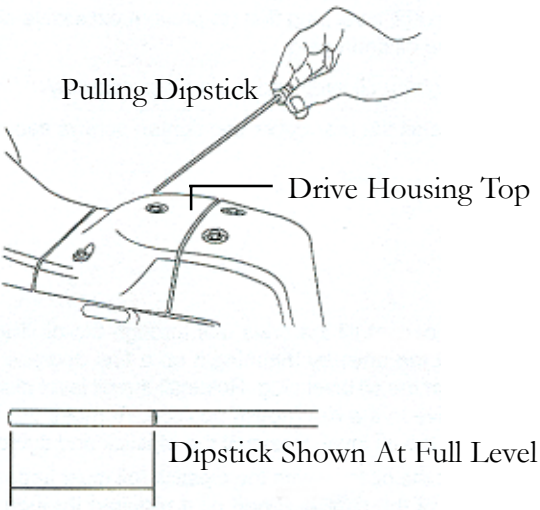
3. Replace the fill cap and tighten securely.

**NOTICE**

HELPFUL HINT:
TO FILL THE TRIM, CRANKCASE & POWER STEERING
LEVELS WITHOUT SPILLING FLUID
PURCHASE A FUNNEL AT AN AUTOMOTIVE
STORE WITH A LONGER NECK THAT WILL FIT THE
RESERVOIR OPENINGS.

**Volvo Sterndrive**

*Checking Volvo Sterndrive Oil*




## CAUTION

FULLY THREAD OIL DIPSTICK INTO THE OIL LEVEL HOLE IN THE DRIVE UNIT TO PROPERLY CHECK THE OIL LEVEL. AN IMPROPER OIL LEVEL MAY RESULT IN SERIOUS STERNDRIVE COMPONENT DAMAGE.

It is recommended to check the drive oil level on a weekly schedule. Fully thread the dipstick into the hole. At this point, remove the dipstick and make sure the oil level is at the top of the mark as shown above. If the oil level is low, add enough oil to bring the level to the top of the mark on the dipstick. DO NOT OVERFILL. Tighten up the dipstick with a slotted screwdriver.

If the oil color is milky in appearance there probably is water in the unit normally caused by a leaking seal.

No metal flakes should be present in the oil. If the abov e conditions exist contact a Regal dealer.

**MerCruiser Engine**

*Checking Engine Crankcase Oil*

1. Check the engine oil by first allowing the engine to warm up abit. Stop the engine and allow about 5 minutes for the oil to drain to the oil pan to obtain an accurate reading.

2. Remove the dipstick. Wipe it clean and reinstall it into the dipstick tube. Wait 1 minute to allow any trapped air to vent. ( Install dipstick with oil indication marks facing the flywheel end of the engine. Add Mercury/Quicksilver Synthetic Blend MerCruiser Engine Oil 25W-40 to bring the level up to the full or OK points on the oil dipstick. DO NOT OVERFILL.

3. Remove the dipstick and look at the oil level. Level must be between full or OK range and add. Reinstall dipstick into the tube.

**NOTICE**

ADDING 1 QUART OF ENGINE OIL WILL RAISE
THE OIL LEVEL FROM THE ADD MARK
TO THE TOP OF THE OK RANGE

4. When checking or filling the engine crankcase oil ensure that the vessel is level in the water or on a trailer.

For changing the engine oil & filter see the MerCruiser maintenance schedule and operation manual or contact your Regal dealer.

*Note: Above are basic recommendations. Regal is not responsible for the accuracy of the information since it can change at any time. For more detailed information and procedures check your engine operators manual or call a Regal dealer servicing the product line.*

*Checking Sterndrive Oil*

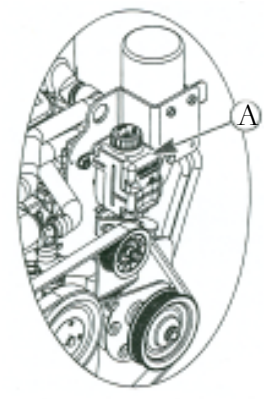
**CAUTION**

ENVIRONMENTAL HAZARD!
DISCHARGE OF OIL OR OIL WASTE
INTO THE ENVIRONMENT IS RESTRICTED BY
LAW. DO NOT SPILL OIL OR OIL WASTE INTO THE
ENVIRONMENT WHEN USING OR SERVICING
YOUR VESSEL. DISPOSE OF OIL OR OIL WASTE
AS DEFINED BY LOCAL & STATE AUTHORITIES.

1. Drive oil level must be checked with the engine cold before starting.

2. Check the gear oil level in the reservoir located on the engine. Keep the gear oil level at the recommended ranges as marked on the reservoir. If any water is visible at the bottom of the reservoir or there are any metal chips in the drive oil do not run the engine since component damage can result. Contact your Regal dealer for more information.

*Filling the Sterndrive*




A=Drive Reservoir

1. If more than 2 ounces of High Performance Gear Lubricant is required to fill the monior reservoir a seal may be leaking. Contact your Regal dealer.

2. If drive lubricant is free from water and metal chips proceed to fill the reservoir. Remove the gear lube monitor cap. Fill the reservoir with High Performance Gear Lubricant (Merc part # 92-802854A1).

3. Fill the reservoir so that the drive oil level is in the operating range. Do not overfill. For changing the drive oil refer to the MerCruiser operation manual or contact a Regal dealer for more information.

Checking Power Steering Fluid

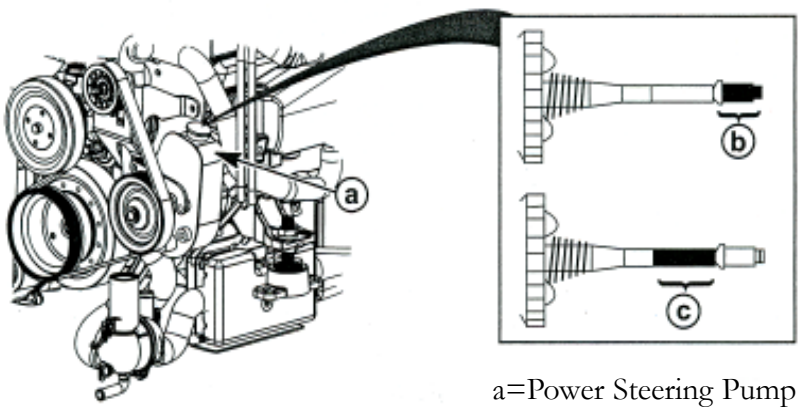
1. Stop the engine and center the sterndrive unit.

2. Remove the combo fill cap/dipstick and observe the level.

a. Proper fluid level with engine at normal operating temperature should be within the warm range.

b. Proper fluid level with engine cold should be within the cold range.

3. Fill to line with Quicksilver Power Trim & Steering Fluid (Merc # 92-802880A1) or Dextron III automatic transmission fluid. If you can not see any fluid in the power steering reservoir contact your Regal dealer since a leak must of developed in the system.




a=Power Steering Pump
b=Engine Cold Range
c=Engine Warm Range

*Checking Power Trim Fluid*

**CAUTION**

ALWAYS CHECK THE OIL LEVEL
WITH THE STERNDRIVE
IN THE "FULL" DOWN OR "IN" POSITION.

1. Place the stern drive unit in the full down position.

2. Observe the oil level. Level must be between the "MIN" or "MAX" lines on the reservoir.

3. Fill as necessary with Power Trim & Steering Fluid (Merc part # 92-802880Al).

Refilling The Reservoir

1. Remove the fill cap from the reservoir. Fill cap is vented.

2. Add lubricant to bring level to the within the "MIN" and "MAX" lines on the reservoir. Use Power Trim & Steering Fluid (92- 802880A1).

3. Install the cap.

*Changing Power Trim Fluid*

1. Power steering fluid does not require changing unless it becomes comtaminated with water or debris. Contact a Regal dealer to change the fluid.

*Checking Engine Coolant*

**WARNING**

AVOID BODILY INJURY!
ALLOW ENGINE TO COOL DOWN BEFORE REMOVING THE COOLANT PRESSURE CAP. A SUDDEN LOSS OF PRESSURE COULD CAUSE HOT COOLANT TO BOIL AND DISCHARGE VIOLENTLY. AFTER THE ENGINE HAS COOLED, TURN THE CAP 1/4 TURN TO ALLOW PRESSURE TO ESCAPE SLOWLY, THEN PUSH DOWN & TURN THE CAP COMPLETELY OFF.

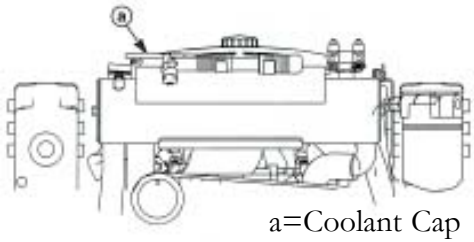
1. Remove the cap from the heat exchanger and observe the level of the fluid.

2. The coolant level in the heat exchanger should be at the bottom of the filler neck. A low coolant level means you should contact your Regal dealer.

3.Install the cap onto the heat exchanger.

4. When reinstalling the pressure cap, be sure to tighten it until it seats on the filler neck.

5. With the engine at normal operating temperature, check the coolant level in the coolant recovery canister.




a=Coolant Cap

6. The coolant level should be between the "ADD" and "FULL" marks.

7. Add Extended Life Antifreeze/Coolant (Mercury part # 92-877770K1).

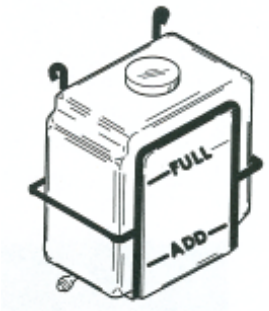
**CAUTION**

AVOID ENGINE DAMAGE!
DO NOT USE ALCOHOL OR METHANOL BASED ANTIFREEZE OR PLAIN WATER IN THE COOLANT SECTION OF THE **CLOSED COOLING SYSTEM** AT ANY TIME.

**NOTICE**

ADD COOLANT ONLY WHEN THE ENGINE IS AT A NORMAL OPERATING TEMPERATURE.

*Filling Engine Coolant*




1. Remove the fill cap from the coolant recovery canister.

2. Fill to the "FULL" line with Extended Life Antifreeze/Coolant Mercury part # 92-877770K1.

3. Reinstall the cap onto the coolant recovery canister.

Changing Engine Coolant

Call your Regal dealer to change coolant in the entire system.

## Electrolysis Protection

Sacrificial zinc anodes usually found on the outdrive housing, trim cylinders or propshaft to protect softer metals exposed to the water. Electrolysis attacks the least noble metals first. Because zinc is a less noble metal, it will decompose before other metals. Check these zinc anodes periodically and have them replaced when they are 50% gone. Zinc is also used to protect metal that is exposed to saltwater. The salt causes a galvanic action that decomposes metals.

Zinc anodes in saltwater need to be checked more frequently. If the anodes seem to be requiring frequent replacement there may be a boat emitting a shore power leak into the water taxing the anodes. This is especially possible around a marina environment. If this is the case contact the marina personnel since the current in the water can be measured by a device. Refer to the engine manufacturer's manual for exact location and detailed information regarding anodes. Outdrive damage due to neglecting anode inspection service is not covered under the warranty.

| SERVICE/MAINTENANCE LOG | | |
|---|---|---|
| DATE | HOURS OF OPERATION | SERVICE/REPAIRS PERFORMED |
| | | |
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# Troubleshooting

## DIAGNOSTIC CHARTS

The following diagnostic charts will assist you in identifying minor electrical, fuel, and mechanical problems. Some of the items listed require technical training and tools. Additional assistance is available in the engine manufacturer's manual. Also, you can contact your closest Regal dealer or marine professional for more information. Most defects can be found by doing a logical sequence of elimination.

**CAUTION**

TO AVOID BODILY INJURY AND PROPERTY DAMAGE!
USE ONLY APPROVED MARINE
REPLACEMENT PARTS.

**WARNING**

TO AVOID BODILY INJURY AND DEATH!
BEFORE PERFORMING ANY MAINTENANCE WORK
TURN OFF THE BATTERY SWITCH AND REMOVE
THE KEYS FROM THE IGNITION SWITCH.

## REMOTE CONTROL DIAGNOSTIC CHART

| PROBLEM | POSSIBLE CAUSE | POSSIBLE FIX |
|---|---|---|
| Remote control stiff/inoperative | Corroded cable | Clean/lubricate cable |
| | Kinked cable | Replace cable |
| | Broken cable | Replace cable |
| | Remote control box jammed | Repair/Replace box |
| Throttle only control inoperative (neutral) | Worn throttle cable | Replace cable |
| | Binding Cable | Follow cable routing; look for pinched cable |
| | Broken cable | Replace cable |
| | Control box worn or in need of lubrication | Refer to information supplied by control mfg. |

## INSTRUMENT DIAGNOSTIC CHART

| PROBLEM | POSSIBLE CAUSE | POSSIBLE FIX |
|---|---|---|
| No reading on gauge or gauge reads wrong | Faulty gauge | Replace gauge |
| | Wiring to gauge faulty | Inspect/repair wiring |
| | Faulty sender | Replace sender |
| Gauge reads erratic | Loose ground or hot wire | Repair or replace wire and or connection |

## PERFORMANCE DIAGNOSTIC CHART

| PROBLEM | POSSIBLE CAUSE | POSSIBLE FIX |
|---|---|---|
| Excessive vibration | Material obstructing propeller | Remove material by reversing engine |
| | Bent propeller shaft | Call Regal dealer |
| | Bent propeller blade | Repair/replace propeller |
| | Propeller hub slipping | Replace propeller |
| Poor performance | Engine trim incorrect | Adjust trim |
| | Uneven load distribution | Adjust boat load |
| | Engine problem | Call Regal dealer |

## FUEL SYSTEM DIAGNOSTIC CHART

| PROBLEM | POSSIBLE CAUSE | POSSIBLE FIX |
|---|---|---|
| Engine won't start or not running right | Fuel tank vent obstructed | Clean vent hose or and fitting. Check for kinks. |
| | Fuel line blocked | Check for kinked hose |
| | Lack of fuel | Clean filter. Check for clogged anti-siphon valve |
| | Water in fuel | Eliminate water |
| | Clogged fuel filter | Replace filter element |
| | No fuel reaching engine | Check fuel pump output. Clean filters. Check fuel tank gauge level. |

| FRESH WATER DIAGNOSTIC CHART | | |
|---|---|---|
| **PROBLEM** | **POSSIBLE CAUSE** | **POSSIBLE FIX** |
| Air in system | Water tank empty | Fill tank. With pump on bleed air from lines until water flows out faucet w/o air. |
| Fresh water pump cycles on and off | Leak in water system | Locate water leak & repair |
| No water at sink faucets | Breaker blown | Reset breaker |
| | Water tank empty | Refill water tank |
| | Switch turned off | Turn switch on |
| | Blocked/pinched line or water filter | Clear obstruction or straighten line; Clean water filter |
| | Loosr or disconnected wire | Check connections; Tighten as needed |
| Low water pressure | Defective fresh water pump | Replace pump |
| Weak pressure at transom shower | Line pinched | Relocate line |
| Water to pump. No output | Faulty pump or pump pressure switch | Replace water pump or pressure switch |

| WASTE SYSTEM DIAGNOSTIC CHART | | |
|---|---|---|
| **PROBLEM** | **POSSIBLE CAUSE** | **POSSIBLE FIX** |
| ***Chemical head*** not flushing with push valve | Out of fresh water | Fill with fresh water |
| ***Chemical head*** emits odor | Lower tank full<br><br>No chemical in lower tank | Empty toilet<br><br>Add chemical |
| ***Marine head*** not flushing | Seacock closed<br><br>Breaker in "off" postition | Open seacock<br><br>Turn breaker "on" |
| ***Marine head*** not emptying | Blocked holding tank line<br><br>Holding tank full | Unclog line<br><br>Pump-out holding tank |
| ***Marine head*** tank emits odor | Worn or tore pump diaphragm | Repair/replace diaphragm |
| Macerator option runs but doesn't exit waste | Seacock "off" | Open seacock |
| Macerator option won't run | Defective pump, faulty wire, tripped breaker<br><br>Key switch at monitor panel not activated | Replace pump, wire, or reset breaker<br><br>Turn "on" key switch |

| DC ELECTRICAL DIAGNOSTIC CHART | | |
|---|---|---|
| **PROBLEM** | **POSSIBLE CAUSE** | **POSSIBLE FIX** |
| No 12 volt power | Battery switch in "off" position | Turn selector switch to "on" position |
| | Weak or dead battery | Charge or replace battery |
| Battery not charging; (Engine running) | Loose belt | Tighten belt |
| | Faulty alternator | Repair/Replace alternator |
| | Faulty volt meter | Replace volt meter |
| Battery will not hold charge | Faulty/Old battery | Replace battery |
| 12 volt equipment not working | Equipment switch "off" | Switch to "on" position |
| | Circuit breaker blown | Push reset on circuit breaker |
| | Weak or dead battery | Replace battery |
| | Corroded connection | Eliminate corrosion |
| | Loose wire | Tighten connection |
| | Internal equipment short | Replace equipment |

# Storage & Winterization

Storage procedures are outlined in this chapter. These are ***general guidelines*** to follow before longer periods of storage such as over the winter in colder climates. Be sure to familarize yourself with all relevant information in the owner's pouch. Special winterization procedures are necessary for the boat equipment and systems. Use the enclosed checklists to help you identify areas of concern and maintenance. These lists cover land stored boats either inside or outside. Call a Regal dealer or marine professional for further information.

**WARNING**

EXPLOSION, FIRE AND POLLUTION HAZARD!
DO NOT FILL FUEL TANK TO RATED CAPACITY
LEAVE ROOM FOR EXPANSION.

**CAUTION**

REMOVE BATTERY(IES) WHEN VESSEL IS IN LONG PERIODS OF STORAGE.

**CAUTION**

TO PREVENT ENGINE DAMAGE!
USE ONLY ETHYLENE GLYCOL BASE ANTIFREEZE.
DO NOT USE ALCOHOL BASE PRODUCTS.

# CHAPTER 9

# DECOMISSIONING CHECKLIST

**ENGINE**

- ☐ Run engine. Pour a fuel stabilizer/conditioner in the fuel tank. Allow timefor it to circulate through the fuel system.
- ☐ Change all engine fluids as referenced in the engine manufacturer's owners manual.
- ☐ Drain cooling and exhaust system or have a marine professional "pickle" the engine with anti-freeze and rust preventative.
- ☐ Spray all exterior parts with a rust preventative.

**STERN DRIVE**

- ☐ Remove drive. Perform maintenance as referenced in the manufacturer's owners manual.
- ☐ Remove propeller. Refurbish as needed.
- ☐ Touch up paint on stern drive upper and lower gear housings as required.
- ☐ Apply coat of wax to stern drive.

**BOAT**

- ☐ Check hull bottom for any fiberglass damage. Repair as needed
- ☐ Apply a coat of wax to hull and deck surfaces.
- ☐ Pour a pint of 50/50 antifreeze into bilge pump.

- ☐ Remove battery (ies). Charge as needed.
- ☐ Remove all loose gear from boat such as life jackets, etc. Inspect and store in cool, dry environment.
- ☐ Remove drain plug. Clean drain plug hole of debris as needed. Enclose drain plug in plastic bag and tie to steering wheel.
- ☐ Make sure bow is higher than stern to permit proper drainage.
- ☐ Clean all upholstery and store so it breathes.
- ☐ Conduct a visual inspection to ensure boat is balanced properly on the trailer, cradle or blocks.
- ☐ Cover boat with tarp. Tie down for wind protection if outside. Prop tarp up as needed to provide proper ventilation. Be sure not to cover up the fuel vents.
- ☐ Drain the fresh water system per instructions in this chapter.

**TRAILER**

- ☐ Repack all wheel bearings per manufacturer's specifications.
- ☐ Check all trailer parts for excessive wear. Replace/refurbish as needed.
- ☐ Use touch up paint on trailer as needed.
- ☐ Lubricate all moving parts as needed.
- ☐ Block the trailer up to remove some of the strain on the wheels.
- ☐ If outside, install a coupler lock to prevent theft.

**FRESH WATER SYSTEM**

1. Turn on the fresh water pump switch.

2. Open all faucets including transom shower (if equipped) and allow tank to empty.

3. Drain the water tank. Shut off fresh water pump switch.

4. Mix non-toxic antifreeze with water in accordance with the manufacturer's recommendations. (Available at marina & RV stores)

5. Pour solution into the fresh water tank.

6. Turn on fresh water pump switch.

7. Open water faucet and purge until a steady stream of non-toxic antifreeze flows from the faucet. If equipped, do the same to the transom shower. Turn the fresh water switch off..

**WASTE SYSTEM**

1. With **chemical** heads, make sure to dump both upper and lower tanks. Rinse well with fresh water.

2. With **marine** head, pump out holding tank. Add non-toxic antifreeze to toilet and holding tank. Pump from toilet to holding tank to eliminate any water in lines.

**NOTICE**

AVOID VESSEL AND ENGINE DAMAGE!
CONTACT MARINE PROFESSIONAL FOR WINTERIZATION INSTRUCTIONS. DAMAGE NOT COVERED BY WARRANTY.

# RECOMISSIONING CHECKLIST

## ENGINE/STERN DRIVE

- ☐ Check all components per engine manufacturer's owners manual especially fluid levels.
- ☐ Run engine on "ear muffs" before launching. Check for fuel, exhaust, oil, and water leaks.

## BOAT

- ☐ Install drain plug.
- ☐ Install battery and tighten all terminals.
- ☐ Check all equipment, switches, alarms, gauges and breakers for proper operation.
- ☐ Add necessary chemicals and water to **chemical** head.
- ☐ Add water to fresh water tank. Turn on faucet to purge tank. Refill water tank.
- ☐ Make sure all safety gear is on board and in excellent working condition.
- ☐ After launching, check controls and gauges for proper operation.

## TRAILER

- ☐ Make sure all equipment is in excellent working condition.

# Trailering

This chapter covers trailering basics including equipment, maintenance, and techniques of trailer usage. ***Check with state and local agencies for detailed information on required equipment, safety issues, and licensing.***

## BEFORE TRAILERING

Before trailering your boat, be sure to check the air pressure of your tires for the recommended inflation rating. Also, be certain that your tow vehicle is in good working order.

Stow all gear to be carried properly, especially heavy items such as batteries or anchors. Be sure these items are secured. Don't overload and try to carry too much on your trailer.

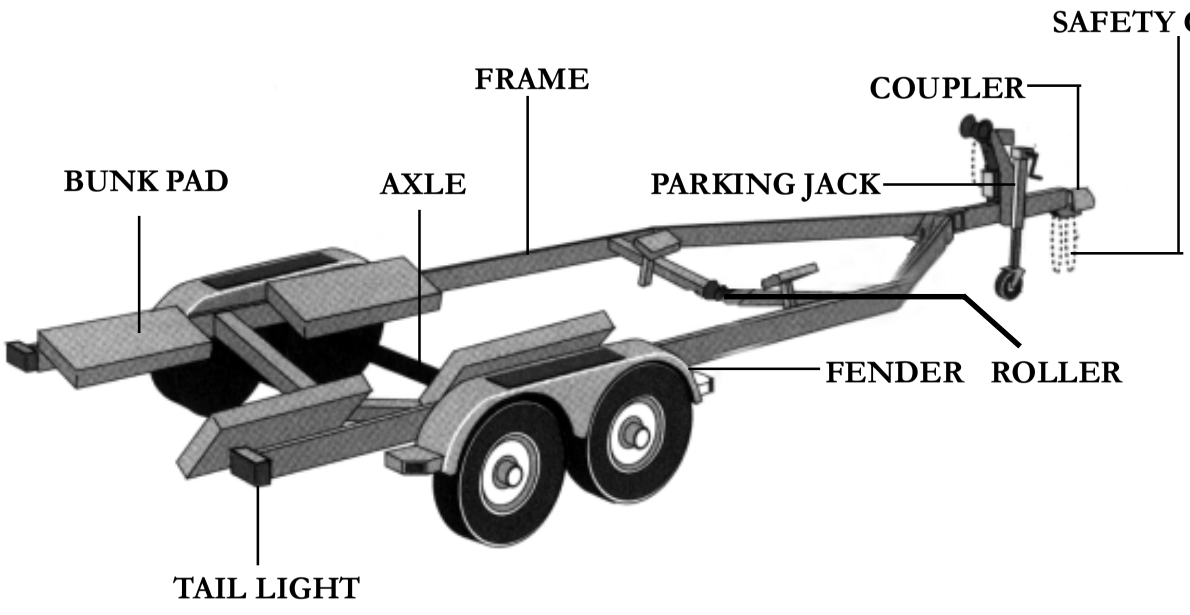
Give consideration to the weight distribution of your trailer. If the rear end of your vehicle sags, chances are the load is positioned too far forward on your trailer.

This can make it especially difficult todrive safely, as the hitch may be in danger of striking the road. Also, this situation can be caused by worn rear shock absorbers. One option is to install a set of air shocks which will assist in supporting the load. As a rule of thumb 5 to 7 percent of the total trailer load should be on the trailer tongue.

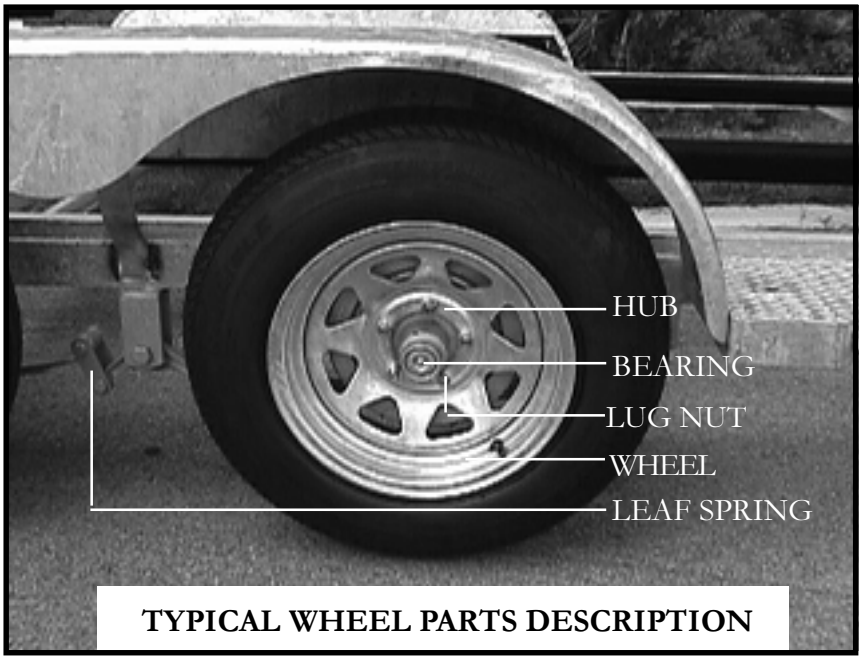
Check all lights to ensure thay are in good working order. You may find it helpful at ask someone to check your turn signals, brake lights, and towing lights while you remain in the vehicle and check them.

Be certain that the trailer winch cable is securely attached to the boat's bow eye and the cable lock is engaged. Make sure the bow of the boat is snug against the bow stop at the winch stand. It is a good idea to tie

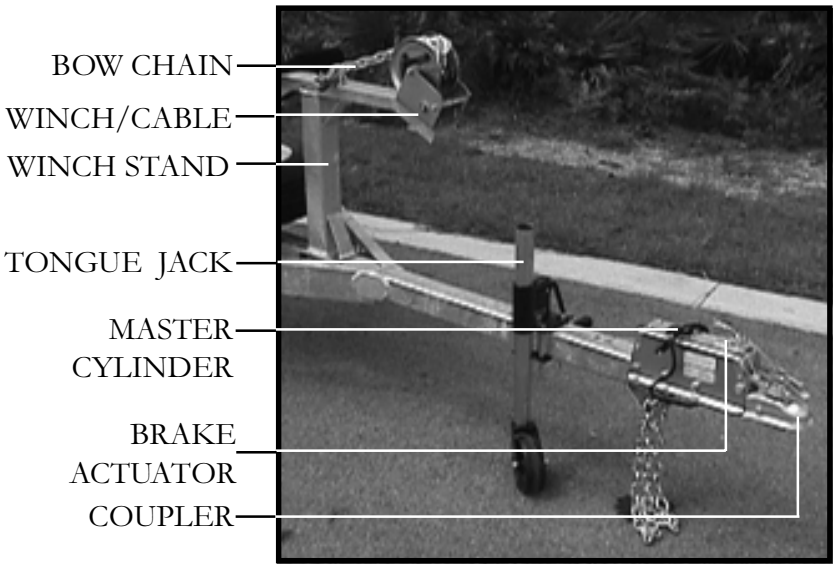
# TRAILER TERMINOLOGY




TYPICAL TRAILER SHOWN




**TYPICAL WHEEL PARTS DESCRIPTION**




**TYPICAL TONGUE SECTION**

another line or secure an extra cable to the winch stand and boat bow eye as a backup system.

Be certain that your trailer is of rated capacity for the size and weight of your boat, including the weight for all fuel, water and gear. Your authorized Regal dealer can advise you on the proper trailer capacity and tongue weight ( the weight exerted on the rear of your vehicle).

Never use a bumper mounted trailer hitch. Always use a bolted or welded frame-mounted hitch, class 2 or 3. Consult your Regal dealer for more information.

Should your trailer be equipped with surge brakes, that is brakes on the trailer that cut in with a very slight delay when your brakes are applied, be sure to follow recommended service and maintenance instructions. Be sure that the trailer master cylinder is filled with the recommended fluid before trailering your boat. Inspect the trailer brake lines for any leakage. Also, if you notice brake fluid on the inside of the tires, you may have a wheel cylinder leaking. Consult a professional.

Never place your hands between the trailer hitch coupling and the hitch ball on your towing vehicle while hooking up. Be sure the tongue jack is in the full up position before departure. Be certain safety chains are criss-crossed and secured; do not allow them to drag on the road.

Check the trailer lug nuts for the proper torque. Use a foot pound wrench and torque in a star sequence to the correct poundage as recommended by the trailer manufacturer. Torque the lug nuts at half the poundage on all nuts. Then set the torque wrench to the full poundage and fasten to the last foot poundage figure.

Check the trailer tires often for voids, excessive wear or out of round tire conditions. If the trailer seems to vibrate you may have a bad tire or one that is unbalanced. These wheels can be rebalanced at most automotive or tire shops. Never pull a boat on a patched tire. Buy a spare tire and wheel. Mount it on the trailer speedy installation should a blow out occur.

Check the trailer harness often for signs of fraying. Check the harness connector for corrosion. Make sure the trailer harness when connected to the trailer has enough slack for turning

Check the wheel bearings for wear periodically by a professional. On most trialers, there is a zerk fitting on the wheel hub to add the proper lubricant to the wheel bearing with a grease gun that can be purchased at a supply house of marine store.
Finally, make sure everything is secured in the boat. Tilt the outdrive up to clear the road and any bumps that might occur while in transit.

# DRIVING

Practice maneuvering the vehicle and trailer in a large, empty parking lot or open space. If you practice slowly and cautiously, you will soon develop a feel for maneuvering the trailer properly.
Test your vehicle and trailer brakes before departure along with the lights. Also, be sure you pack a tool kit with extra bulbs, fuses and fluids.
Drive as smoothly as possible, anticipating your stops and giving yourself plenty of room for turning and stopping. Avoid any quick turns or sudden jerks of the steering wheel.
Remember to maintain safe speed limits. It takes longer to stop your loaded boat. Allow enough more room to the front in bad weather.
Keep an eye on your rig through the rear view and side mirrors. If your rear view mirror is obstructed, purchase a set of side mirrors that extend out over the side of the vehicle for increased visibility. It is a good idea to install a set of round mirrors to the side mirrors as they help identify blind spots.
Plan to stop periodically on your way to check the trailer hitch for tightness, harness connector, tires, wheel bearings. Also, check to make sure the load is balanced.

# LAUNCHING

Serious accidents can occur at the launching ramp. Therefore, it is imperative you be alert and attentive during launching and docking activities. Study the ramp area and surrounding water for any potential hazards, such as a short ramp or one with a drop off at the end. If you are uncertain of the conditions, ask someone else who has just used the ramp if there are any peculiarities to the area.

Attach 2 lines, one each at the bow and stern, to control your boat once it is off the trailer. If you need additional fenders to keep the sides of the boat from banging against walls, put those on as well

Unhook the winch line to the bow. Unplug the trailer harness connector so the trailer lights won't blow out when they come in contact with the water.

When backing in, have someone assist, giving the palms up stop signal when the boat is in deep enough water to float off, or when the rear wheels of your vehicle approach the water's edge.

After your boat is floating freely, position it clear of the trailer before pulling out of the water. If there is no one to help you, secure one of the lines you've attached from the boat to the dock and use the other line to pull the boat off trailer. You should have someone assist you.

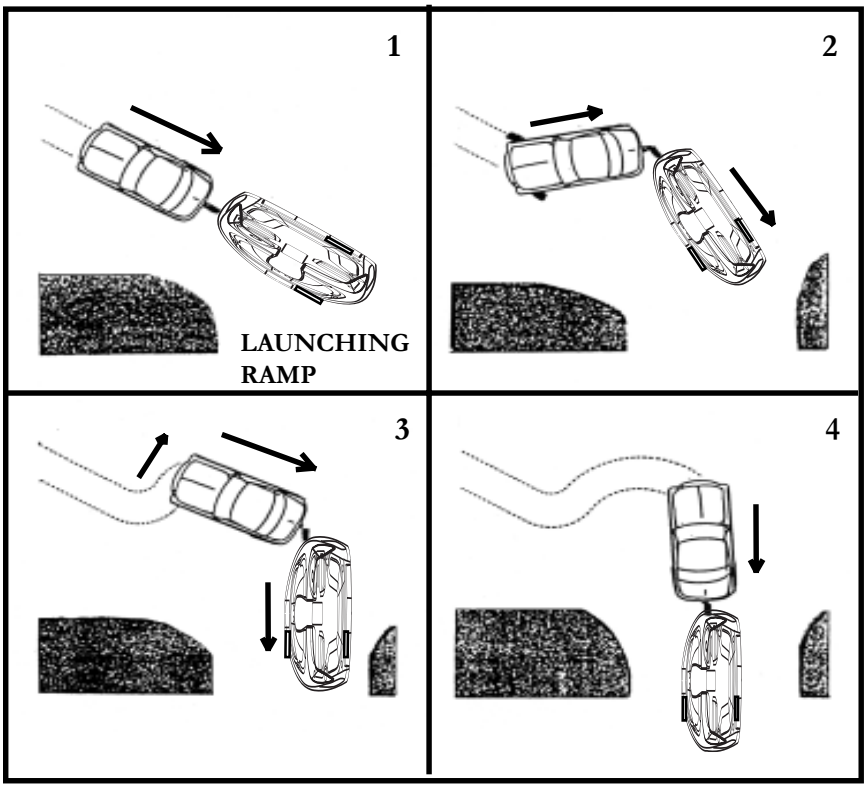
**CAUTION**

AVOID LOSING VEHICLE TRACTION!
DO NOT ALLOW REAR WHEELS TO ENCOUNTER SANDOR SLIPPERY CONCRETE CONDITIONS.

**WARNING**

AVOID BODILY INJURY!
RAMPS ARE VERY SLIPPERY. DO NOT ATTEMPT TO WALK OR STAND ON AN ANGLED BOAT RAMP.

# BACKING A TRAILER




A trailer backs in a direction opposite to an automobile. In 1, driver swings the rig near the launching ramp. In 2, the driver cuts the vehicle toward the driveway. In 3, the driver cuts the vehicle wheels to the left and then backs into the ramp as the trailer moves to the right. In 4, the driver straightens the vehicle wheels to follow the trailer as it backs down the ramp.

**NOTICE**

ALLOW TRAILER WHEEL BEARINGS AND LIGHTS TO COOL BEFORE SUBMERGING.

# LOADING BOAT

The most important thing to remember when getting your boat out of the water is that often the ramp will be crowded. As you approach the ramp, make a visual inspection of the traffic, both at the ramp and all around you. This is an important time to use caution, courtesy, and common sense. While you may feel it's your next turn, another boater may not be as courteous. Don't insist on your rightful place in line; it could lead to disastrous consequences in the confines of a crowded boat ramp. If there is any perceived danger, stand off until you can safely approach the ramp.

Back your trailer down to the water's edge. At this point it is a good idea to let a sufficient amount of line out of the winch to reach the bow eye. Make sure you disconnect the trailer harness to keep the bulbs from blowing out due them being subjected to the cold water.

On roller or bunk style trailers back up until the aft roller is just at the water level. This allows you to hook up the winch cable and to start cranking the boat on to the trailer properly. This method gives you a good starting point and helps keep the boat centerd on the trailer as it is reloaded. It may be necessary to further back the trailer into the water to allow cranking up the boat.

Once the boat is positioned correctly on the trailer have someone hook up the winch cable hook to the bow eye. Also, this will help keep the boat bow against the trailer roller. Shut down the engine and run the outdrive up to to the top of the trailer position.

With the bow snug against the roller, start to crank the boat up onto the trailer. Make sure the hull bottom or keel stays in the center of each roller as it is being cranked on the trailer. On bunk style trailers, watch the bunks to make sure the boat is centered as they usually do not touch any rollers other than the aft one because the boat weight is being supported more by the bunks as it is cranked onto the trailer. Stop cranking the winch when the boat bow contacts the bow roller. Be sure the winch is in the locked position. Stand back and make sure the boat is centered on the trailer.

After pulling your boat away from the ramp, be sure to go through all the checks involved before departure. Reinstall the harness connector and check the lights, brakes, safety chain, winch, hitch, wheel bearing and tie downs. Make sure the boat is covered properly and all loose gear is stowed.

Remove the hull drain plug to exit any excess water in the bilge. Make sure you reinstall the hull drain plug and securely tighten it.

**WARNING**

AVOID PERSONAL INJURY!
DO NOT LET ANYONE STAND NEAR THE WINCH OR CABLE AS THE CABLE COULD BREAK.

**CAUTION**

HULL BOTTOM DAMAGE COULD RESULT FROM THE BOAT NOT BEING POSITIONED ON THE ROLLERS BUT RESTING ON THE TRAILER FRAME.
AVOID BACKING TRAILER TOO FAR INTO THE WATER!

# *Glossary & Index*

Below is a brief list of nautical terms useful in everyday boating experiences and communications. For more detailed glossaries of nautical terminology, we recommend you check your local library or a marine store for boating books.

## GLOSSARY

**Abeam:** at right angles to the fore and aft line and off the boat

**Aboard:** on or in the boat

**Above:** the part of the boat on a bavin vessel which is above the interor of the boat

**Aft,After::** aft is the boat section toward the stern or back of the boat

**Admidships:** toward the center of the boat from either side to side or rear to front

**Beam:** the width of a boat at its widest part

**Bilge:** the lower interior of the hull of the boat

**Bitter end:** the end of a line also the end of an anchor line

**Bow:** the front, or forward part of the boat

**Bulkhead:** the vertical partition or wall of a boat

**Cast off:** to let go or release

**Chine:** the line fore and aft formed by the intersection of the side and bottom of the boat

**Chock:** deck fitting used to secure or guide anchor or tie lines

**Cleat:** deck fitting with protruding arms around which lines are secured

**Cockpit**: the seating space used to accomodate passengers

**Cuddy**: a small cabin in the fore part of the boat

**Deck:** the open flooring surface on which crew and passengers walk

**Draft** the depth from the waterline of the boat to the lowest part of the boat, which indicates how much water is required to float the boat

**Fathom:** a measurement of depth; one fathom equals six feet

**Fender:** a cushion hung from the side of a boat to prevent it from rubbing against a dock or against other boats

**Fend off:** to push off to avoid sharp contact with dock or other vessel

**Fore:** the part of the boat toward the bow or front

**Freeboard:** the height of the top side from the waterline to the deck at its shortest point. (The distance from the sheer or gunwale to the water)

**Galley:** cooking area

**Gunwale:** rail or upper edge of the side of the boat

**Hatch:** an opening in the deck to provide access below

**Head:** toilet

**Hull:** the part of the hull from the deck down

**Keel:** the lowest point of a boat; the backbone of the vessel

**Knots:** a measurement of speed indicating nautical miles per hour

**Lee:** the side opposite that from which the wind is blowing: the side sheltered from the wind

**Leeward:** the direction toward which the wind is blowing

**PFD:** personal floatation device; required for each person aboard

**Port:** the left side of the boat when facing forward (an easy way to remember the difference between "port" and "starboard" is that both "port" and "left" have four letters)

**Shank:** the main body of an anchor

**Sheer:** the curve of the boat's deck from fore to aft when seen from the side

**Starboard:** the right side of the boat when facing forward

**Stern:** the aft end of the boat

**Stern drive:** an inboard/outboard (IO) unit

**Stringer:** strengthening integral unit fastened from fore to aft inside the hull and fiberglass encapsulated for added strength: much like the skeleton system of our body

**Top off:** to fill up a tank

**Transom:** the vertical part of the stern

**Trim:** the boat's balance when properly loaded

**Wake:** the path of a boat left astern in the water

**Windward:** the direction from which the wind blows; opposite of leeward

# INDEX


## A

Accidents 1-27
Accident Reporting 1-28
Admirality Law 5-26
Aids To Navigation 2-6
Alcohol 1-25
Anchor Light 1-16
Anchoring 5-24
Audible Alarms 3-11
Audible Producing Devices 1-15
Automatic Fire Extinguisher 3-10
7-25

## B

Battery 4-1
7-16
Battery Switch 4-8
Berth Set-Up 6-7
Bilge Pump 4-5
6-2
7-21
Blower 4-4
5-6
Breast Lines 5-11
Bucket Seat Operation 6-8

## C

Canvas 6-10
7-6
Carbon Monoxide 1-21
Carbon Monoxide Detector 7-23
Capacity Plate Int-14
Cardiopulmonary Resuscitation 5-28
Carpet 7-2
Cosmetics 7-1
Collision 2-2
Compass 6-3
Controls 3-5
Corrosion 7-25

## D

Dealer Responsibilities Int-15R
Depth Sounder 3-9
Direct Current (DC) 4-1
Distress Signals 1-12
1-13
6-4
Diver's Flag 1-29
Docking 5-14
Dock Lines 5-11
Drain Plug 6-1

## E

EPIRB 1-20
Electrical 4-1
Electrolysis Protection 7-25
Engine 3-1
7-11
9-2
7-26
Equipment Operation 6-1
Exhaust 1-21
Explosion 4-10

## F

Fenders 5-10
Fiberglass Maintenance 7-3
Filters 7-21
Fire Extinguishers 1-10I
Fires 5-27
First Aid 5-28
Float Plan Int-11
Fresh Water System 4-5
4-7
4-13
6-2
7-21
Fuel 4-10
Fuses 4-9

# INDEX

## G


Garbage Placard 1-18
Gas Grill 6-6
Gathering Headway 5-16
Gauges (Instrumentation) 3-7
Gear Shift 3-13
Gelcoat Maintenance 7-3
General Boating Safety 1-3

Getting Underway 5-1
Grounding 7-23


## H


HIN Int-9
Head 4-13
6-2
7-21
Horn 1-19
4-5
Hour Meter 3-7
Hull Bottom 7-9


## I


Ignition Switch 3-11
Instruments (Gauges) 3-5
Interior Fabrics 7-3
International Distress Signals 1-14
Interrupt Switch 3-15


## K


Knots 5-2


## L


Lights 1-15
1-19
2-9
Loading 5-20
Int-14
Lanyard 3-15

Launch & Cruise Checklist Int-12


## M


Maneuvering 5-16
Maintenance Schedule 6-2
Maintaining PFD'S 1-9
Marpol Treaty 5-33
Masthead Light 1-16
1-19
Mayday 1-15
MerCruiser 7-15
Metal (Cleaning) 7-9
Minimum Required Equipment 1-19
Mooring 5-12


## N


Navigation Aids 2-6
Navigation Lights 1-16
Navigation Rules 2-1
Neutral Safety Switch 3-13
New Boat Delivery Checklist Int-17


## O


Oil Pressure Gauge 3-7
Oil Spills 1-17
Overloading Int-14
Owner's Information Packet Int-8
Owner's Registration Int-15
Owner Responsibilities Int-15

## P


Personal Flotation Devices 1-7
1-19
Plastics 7-2
Power Trim 5-19
Precautionary Safety Labels 1-1
Pre-departure questionaire 5-1
Propellers 3-3
7-11
8-3
Propulsion 3-3
Pump Out Fittings 7-21


## R


Recomissioning 9-5
Registration Information Int-19
Remote Control 3-13
7-18
8-2
Right-Of-Way 2-2
Rules Of The Road 2-1


## S


Safety 1-1
Int-14
Sanitizing Water System 6-2
Seating 7-19
Shallow Water Operation 5-22
Ski Tow 1-31
Specifications Tech
Speedometer 3-9
Spring Line 5-11
Starting & Stopping 5-6
Stern Line 5-11
Steering 5-8
5-22
7-16
7-26
Stereo 7-23
Stern Drive 3-3
3-13
5-7
5-14
5-16
5-19
7-11
7-25
7-26
9-2
9-5
Stern Light 1-16
Sunbrella canvas cleaning 7-7
Swim Ladder 6-5
Swim Platform 1-31
Switches (DC) 4-4


## T


Tachometer 3-7
Throttle Control 3-13
8-2
Temperature Gauge 3-8
Towing 5-25
Turning 5-17
Trailering 10-1
Trim Angle 5-19
Trim Gauge 3-9
Troubleshooting 8-1


## U


Upholstery 7-1

# V


Ventilation 1-21
3-2
4-4
5-6
7-24
Visibility 2-9
5-23
Visual Distress Signals 1-12
Volt Meter 3-8
Volvo 7-13
7-25


# W

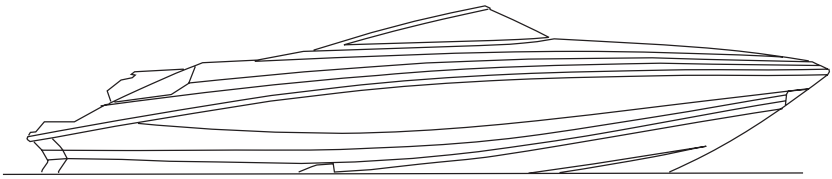

Wake 1-33
Warning Labels 1-1
Warranty Int-18
Waste 4-13
7-21
8-5
Water Skiing 1-29
Weather 1-34
Winterizing 9-1


# Z


Zinc Anodes 7-25

# *Technical Information*

## 2200 & 2250



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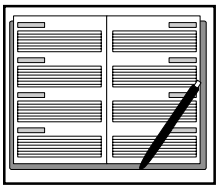


The following technical information and drawings are accurate up to the printing date listed at the beginning of this manual. Note that all product specifications, models, standard and optional equipment, systems, along with the technical information is subject to change without notice. For more information contact your nearest authorized Regal dealer. For the location of your nearest authorized dealer call 407-851-4360 or you can contact Regal through the internet: **www.regalboats.com** Your Regal dealer has received special factory training on the entire product line and his services should be employed to solve more technical problems.

| 2200/2250 GENERAL SPECIFICATIONS | | |
|---|---|---|
| GENERAL SPECIFICATIONS | U.S.A. | METRIC |
| LENGTH OVERALL | 22' 2" | 6.7 M |
| CENTERLINE LENGTH | 22' 2" | 6.7 M |
| BEAM | 8' 6" | 2.5 M |
| DEADRISE | 20 DEGREES | |
| APPROXIMATE DRY WEIGHT W/ 5.0L | 2200=3700 LBS.<br>2250=4060 LBS. | 1678KG<br>1841 KG |
| BRIDGE CLEARANCE TOP UP | 53" | 1.3 M |
| COCKPIT DEPTH | 32" | 0.9 M |
| DRAFT-DRIVE DOWN | 29" | 0.9 M |
| FUEL CAPACITY | 55 GALS. | 208 L |
| MAXIMUM CAPACITY/ PERSONS & GEAR | 10 PERSONS<br>1500 LBS | |
| SLEEPING CAPACITY 2250 | 2 PERSONS | |

# TYPICAL LABELS & LOCATIONS

**DANGER**

CARBON MONIXIDE IS A TASTELESS, ODORLESS AND INVISIBLE GAS THAT CAN CAUSE DISCOMFORT, SEVERE AND EVEN DEATH. EXERCISE CAUTION WHILE OPERATING GENERATOR OR ENGINES IN CONFINED SPACES OR AT DOCKSIDE. DO NOT ALLOW HULL EXHAUST OUTLETS TO BECOME BLOCKED OR EXHAUST FUMES CAN BECOME TRAPPED IN AND AROUND THE CONFINES OF YOUR BOAT, DURING IDLE AND SLOW CRUISE CONDITIONS, BILGE BLOWERS SHOULD BE USED.

**WARNING**

INTERRUPT SWITCH MUST BE ATTACHED TO OPERATOR WHILE ENGINE IS RUNNING. QUALIFIED OPERATOR MUST BE IN CONTROL AT ALL TIMES. READ OWNER'S MANUAL BEFORE USE

NOTE: 2200 SHOWN

**CAUTION:** TO AVOID INJURY, WINDOW MUST BE SECURED IN THE CLOSED POSITION WHEN VESSEL IS IN MOTION. USE BOTH WINDOW LOCKS.
TAYLOR MADE SYSTEMS, INC.

**WARNING**

GASOLINE VAPORS CAN EXPLODE. BEFORE STARTING ENGINE, OPERATE BLOWER 4 MINUTES AND CHECK ENGINE COMPARTMENT FOR GASOLINE LEAKS OR VAPORS. RUN BLOWER MOTOR BELOW CRUSING SPEED.

**MAXIMUM CAPACITIES**

**10 PERSONS OR 1600 LBS**

2580 LBS. PERSONS, GEAR

THIS BOAT COMPLIES WITH U.S. COAST GUARD SAFETY STANDARDS IN EFFECT ON THE DATE OF CERTIFICATION.
MANUFACTURER: REGAL MARINE INDUSTRIES, INC.
MODEL: 2400 LSR ORLANDO, FL
DESIGN COMPLIANCE WITH NMMA REQUIREMENTS BELOW IS VERIFIED. MFGR. RESPONSIBLE FOR PRODUCTION CONTROL.
LOAD CAPACITY * COMPARTMENT VENTILATION
STEERING, FUEL AND ELECTRICAL SYSTEMS
NAVIGATION LIGHTS * MANEUVERABILITY
NATIONAL MARINE MANUFACTURERS ASSN.

LIFETIME *Plus* WARRANTY
REGAL BOATS

NMMA CERTIFIED

**WARNING!**
**MAXIMUM CAPACITY OF SWIM PLATFORM 500 POUNDS 226 KG**

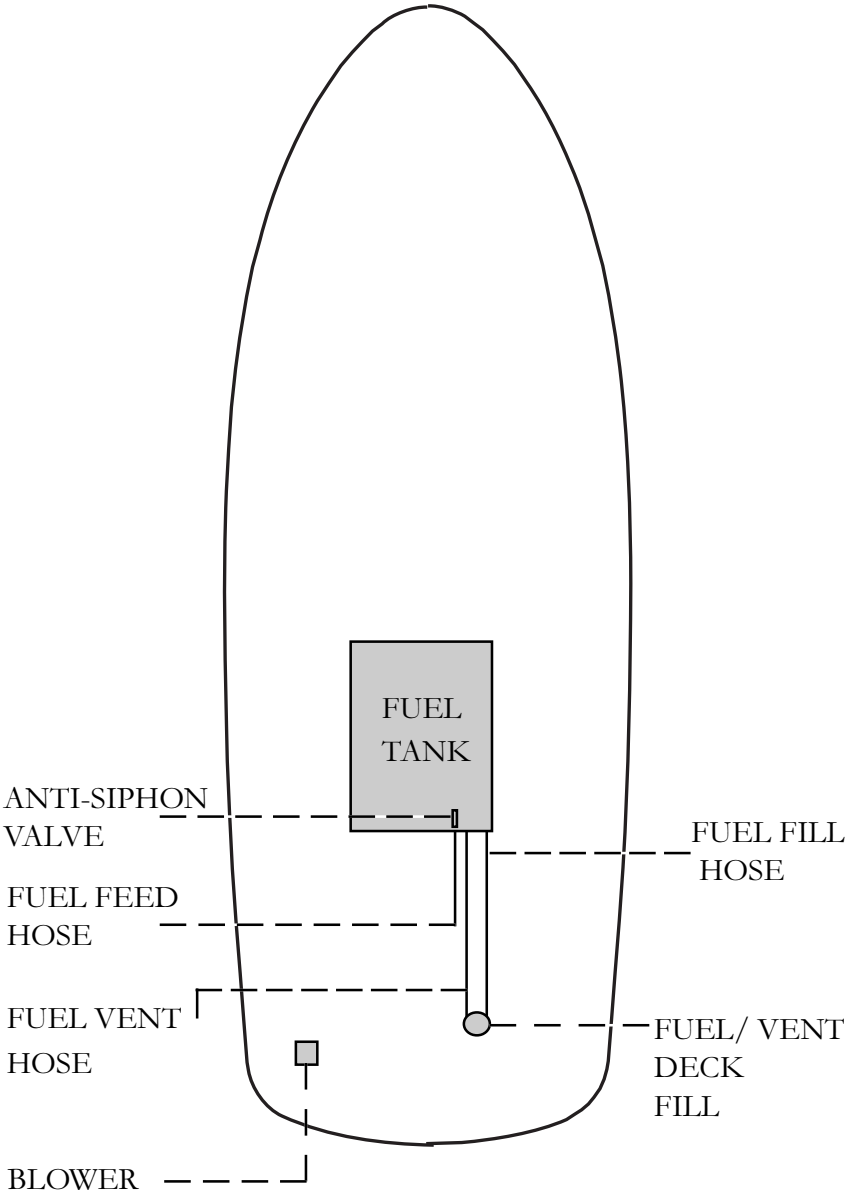
**WARNING**

LEAKING FUEL IS A FIRE AND EXPLOSION HAZARD. INSPECT SYSTEM REGULARLY. EXAMINE FUEL SYSTEM FOR LEAKS OR CORROSION AT LEAST ANNUALLY

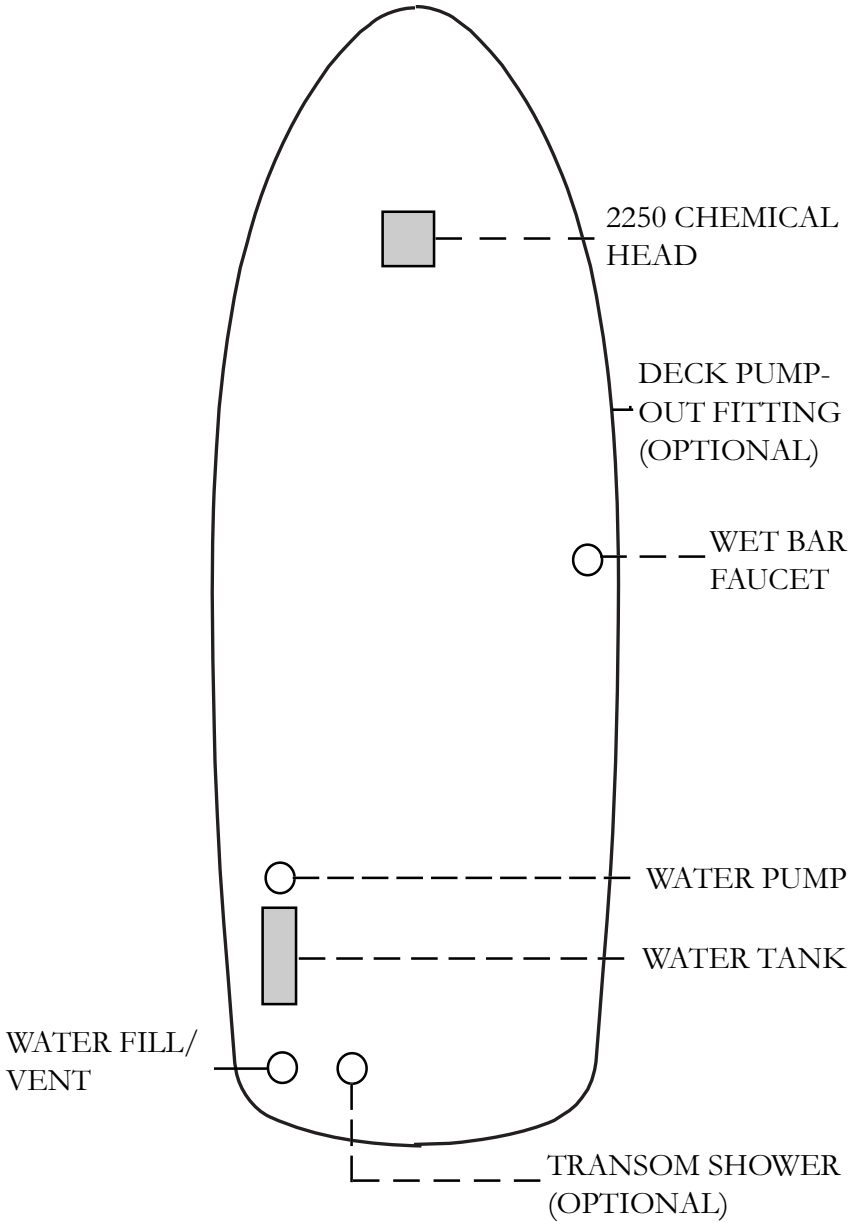
**WARNING**

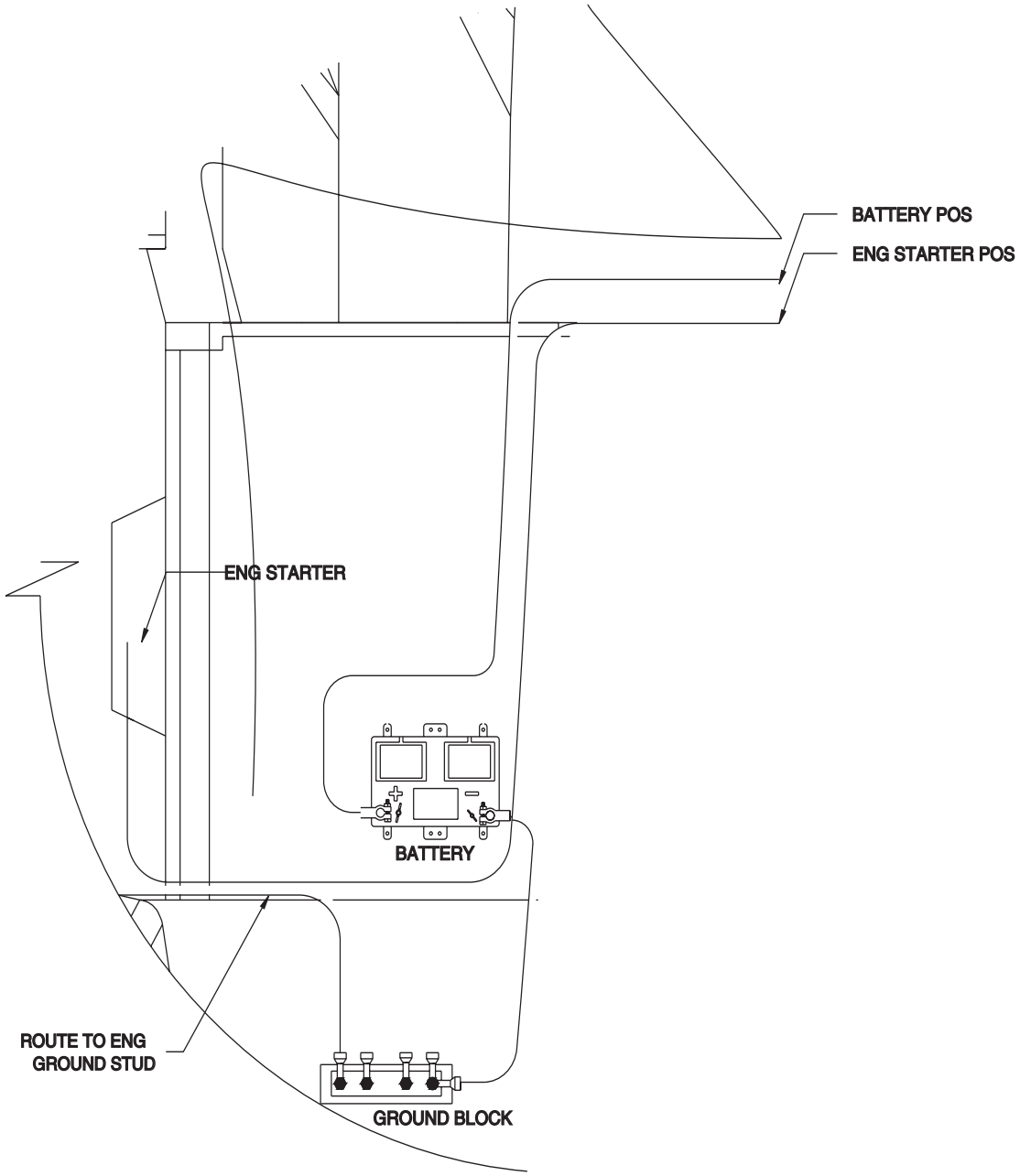
STOP ENGINE BEFORE BOARDING

# 2200 & 2250
# FUEL SYSTEM



# 2200 & 2250
# FRESH WATER & WASTE SYSTEM



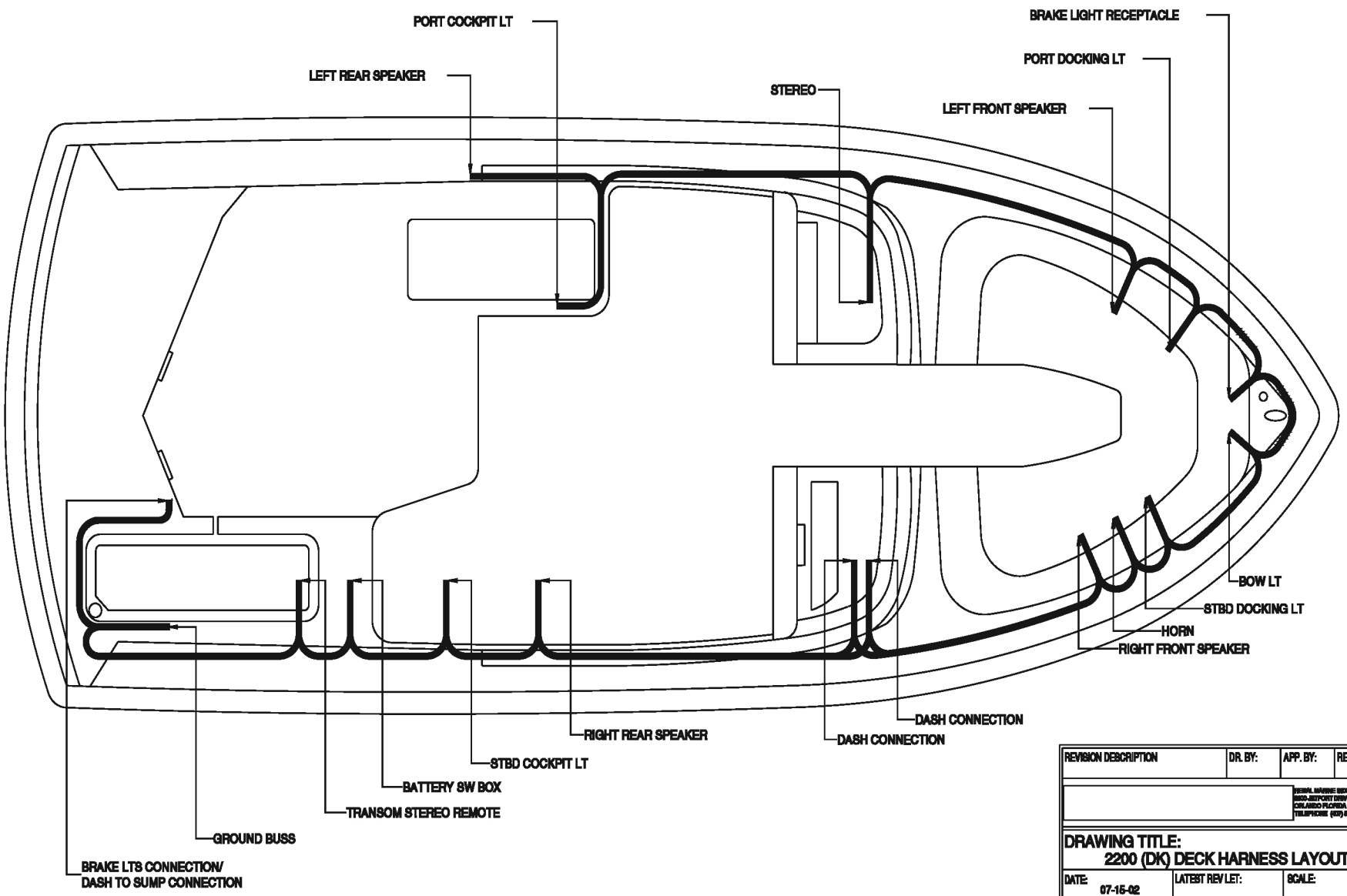



| REVISION DESCRIPTION | DR. BY: | APP. BY: | REV. DATE: |
|---|---|---|---|
| | | | |

REGAL MARINE INDUSTRIES
2300 JETPORT DRIVE
ORLANDO FLORIDA 32809-7895
TELEPHONE (407) 851-4860

DRAWING TITLE:
2200-2250 BATTERY CABLE ROUTING

| DATE: 07-15-02 | LATEST REV LET: | SCALE: |
|---|---|---|
| DR. BY: | APP. BY: | DWG. NO.: BATTELEC |

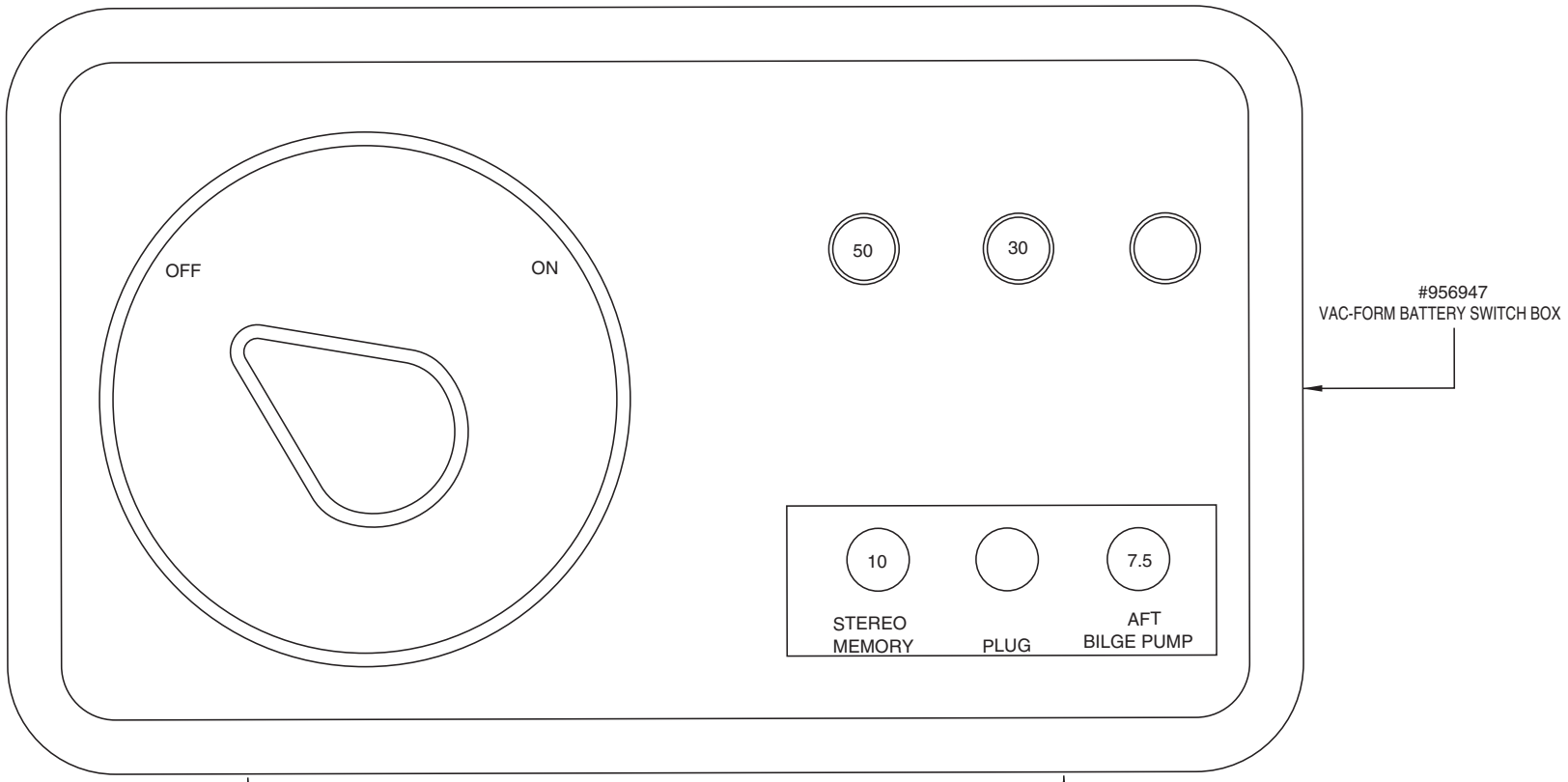



| REVISION DESCRIPTION | DR. BY: | APP. BY: | REV. DATE: |
|---|---|---|---|
| | | | |

DRAWING TITLE:
2200 (DK) DECK HARNESS LAYOUT

| DATE: 07-15-02 | LATEST REV LET: | SCALE: |
|---|---|---|
| DR. BY: | APP. BY: | DWG. NO.: EDK22A |

# FRONT SIDE VIEW



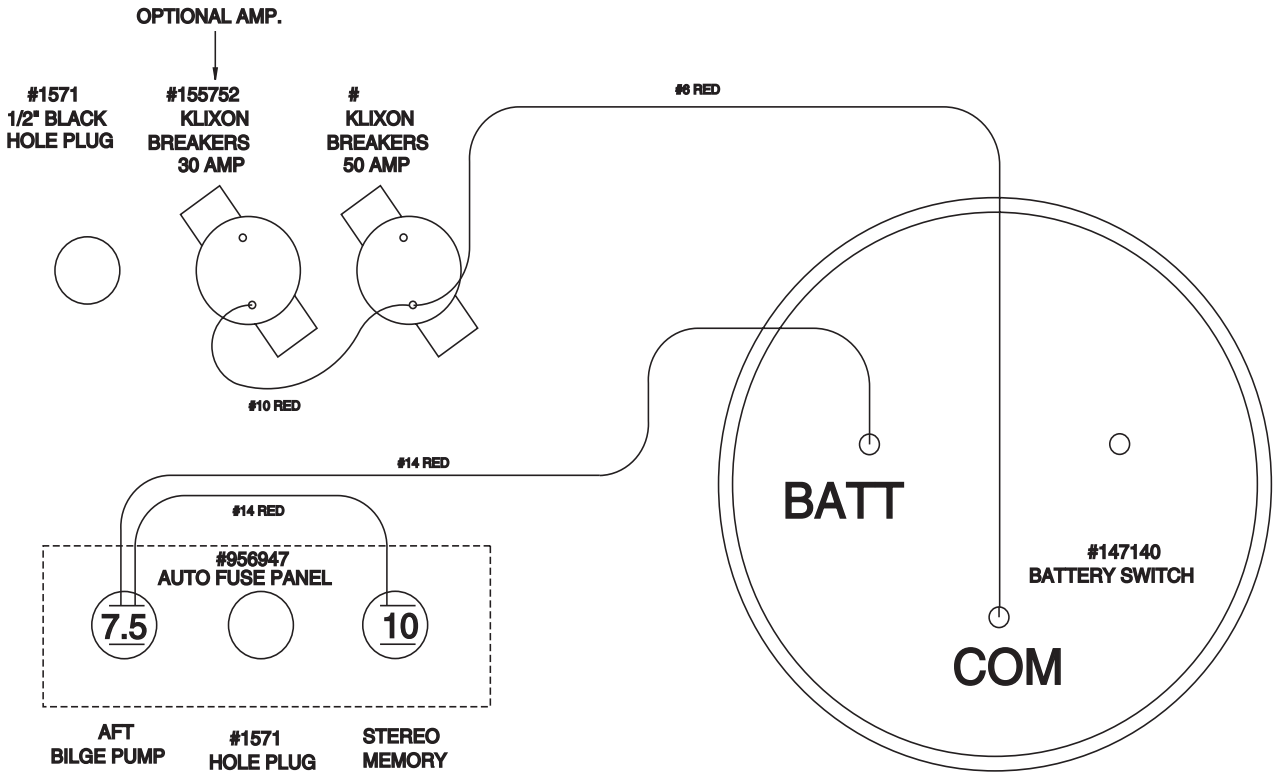

| REVISION DESCRIPTION | DR. BY: | APP. BY: | REV. DATE: |
|---|---|---|---|
| | | | |

REGAL MARINE INDUSTRIES
2300 JETPORT DRIVE
ORLANDO FLORIDA 32809-7895
TELEPHONE (407) 851-4360

DRAWING TITLE:
2200-2250 BATTERY SWITCH BOX

| DATE: | LATEST REV LET: | SCALE: |
|---|---|---|
| X | | NTS |
| DR. BY: | APP. BY: | DWG. NO.: |
| | | X |

# REAR VIEW

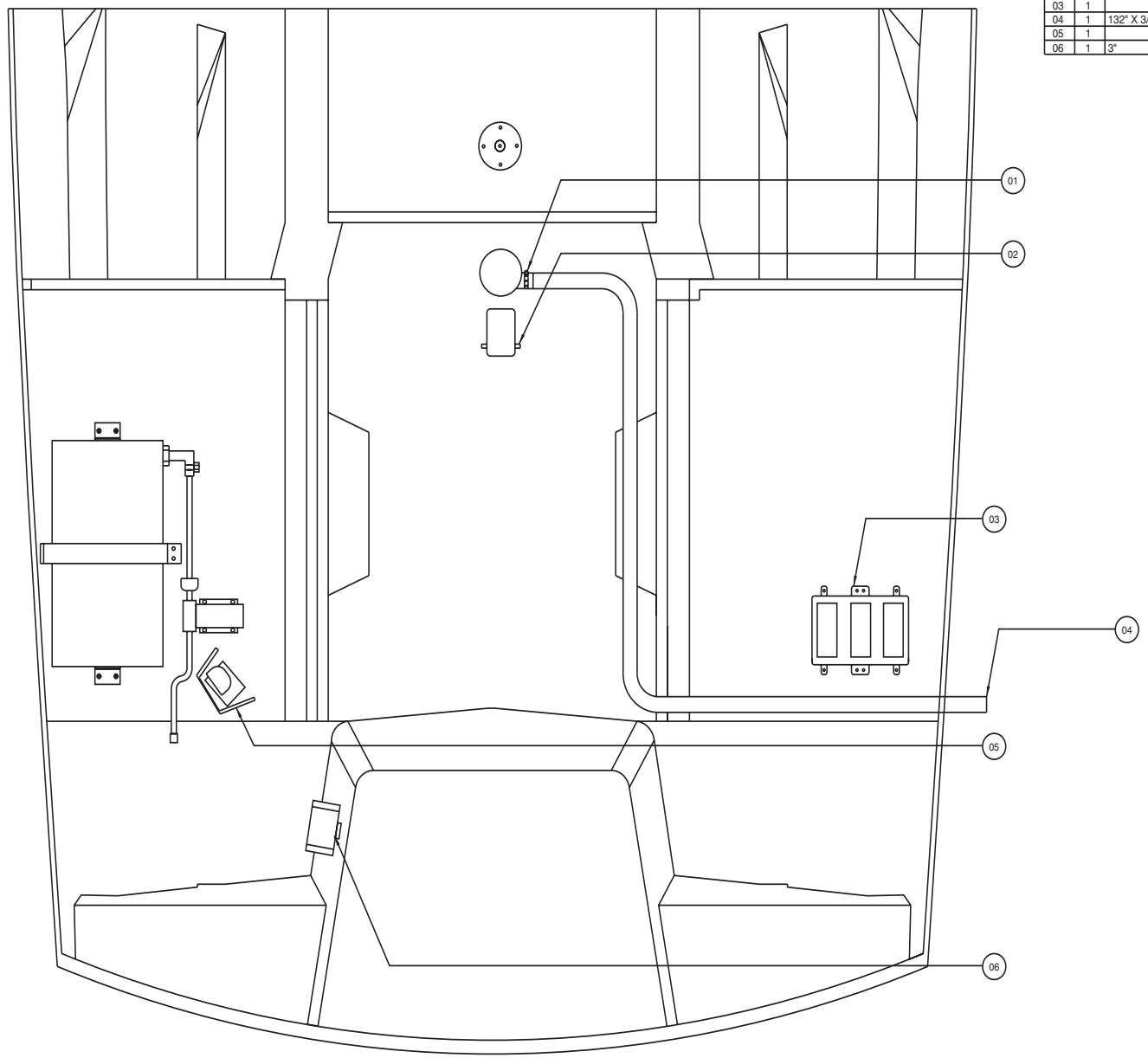



| REVISION DESCRIPTION | DR. BY: | APP. BY: | REV. DATE: |
|---|---|---|---|
| | | | |

FIBRAL MARINE INDUSTRIES
5555 JETPORT DRIVE
ORLANDO FLORIDA 32809-7695
TELEPHONE (407) 851-4555

DRAWING TITLE: SHEET 2 OF 2
2200/2250 (DK/DJ) BATTERY SWITCH BOX

| DATE: | LATEST REV LET: | SCALE: NTS |
|---|---|---|
| DR. BY: | APP. BY: | DWG. NO.: |




BILL OF MATERIALS

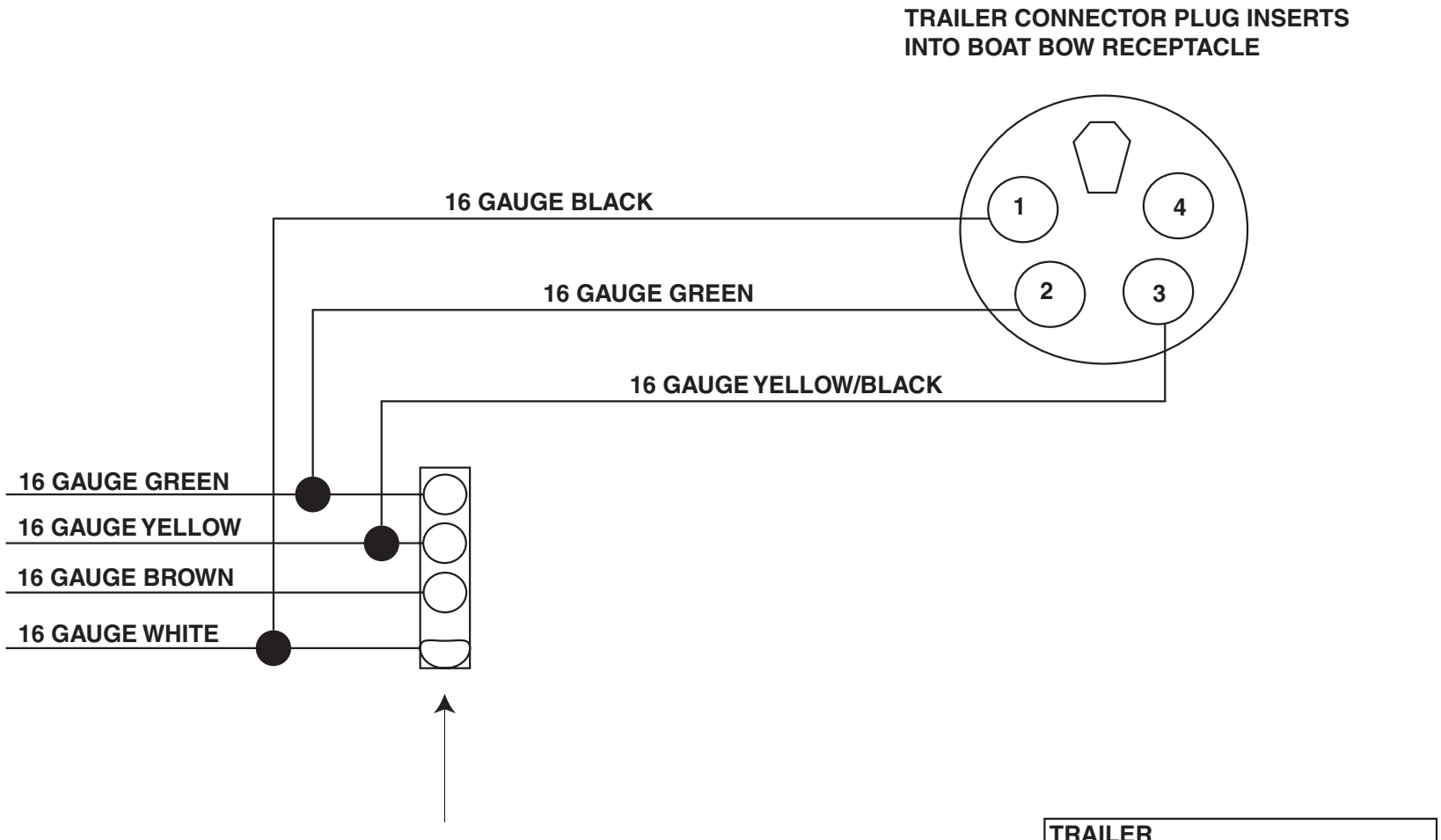
| ITEM | QTY. | SIZE | MATERIAL | PART # |
|---|---|---|---|---|
| 01 | 1 | 500 GPH | BILGE PUMP | 48317 |
| 02 | 1 | | SURE BAIL BILGE SWITCH | 48324 |
| 03 | 1 | | SMALL BATTERY TRAY | 1479 |
| 04 | 1 | 132" X 3/4" | BILGE HOSE | 1462 |
| 05 | 1 | | TRIM PUMP | W/ENGINE |
| 06 | 1 | 3" | BLOWER | 1400 |

| REVISION DESCRIPTION | DR. BY: | APP. BY: | REV. DATE: |
|---|---|---|---|
| | | | |

REGAL MARINE INDUSTRIES
2300 JETPORT DRIVE
ORLANDO FLORIDA 32809-7895
TELEPHONE (407) 851-4360

DRAWING TITLE:
2200-2250 DK/DJ SUMP LAYOUT

| DATE: 07-15-02 | LATEST REV LET: | SCALE: |
|---|---|---|
| DR. BY: | APP. BY: | DWG. NO.: MDK23A |




## TYPICAL TRAILER PLUG

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**Regal Marine Industries, Inc.**
**2300 Jetport Drive**
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**(407) 851-4360**
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**EMail Address: Regal@RegalBoats.com**